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Interlake Property
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SF/HRS

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CERCLA Expanded Site Inspection Report



**Illinois Environmental
Protection Agency**

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INTRODUCTION

In 1999 the Illinois Environmental Protection Agency's (Illinois EPA) Site Assessment Unit was tasked by Region 5 of the United States Environmental Protection Agency (U.S. EPA) to conduct an Expanded Site Inspection of the Interlake Property site located in Chicago, Illinois. The Expanded Site Inspection (ESI) is performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986, commonly known as Superfund. The purpose of the Expanded Site Inspection is to gather information necessary to develop a CERCLA Hazard Ranking System (HRS) proposal.

The site was initially placed on the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) in August, 1980 as a request for discovery action initiated by the U.S. EPA. The site was placed on CERCLIS due to the presence of three manmade lagoons on northeast side of the property which contained heavy metal waste from former site operations. The possibility existed that waste had contaminated associated wetlands, such as Big Marsh.

The site was evaluated in the form of a Preliminary Assessment (PA), by the Illinois EPA, which was submitted to Region 5 of U.S. EPA in 1986. A Screening Site Inspection (SSI) was completed by Illinois EPA during June 1989 (Reference 1).

On March 3, March 31, and April 27, 1999 IEPA personnel visited the Interlake Property and conducted XRF surveys of portions of the site. During the March 31 visit Immunoassay analysis was run on 13 samples.

On April 12, 1999 the Illinois EPA's Site Assessment Unit prepared a workplan for field activities which was submitted to U.S. EPA Region 5 for review. The field activity portion of the CERLCA Expanded Site Inspection (ESI) was conducted on April 27-29, 1999. The investigation included interviews with people familiar with the site, a site reconnaissance inspection, and the collection of environmental samples from the Interlake Property and adjacent locations. During the ESI the Illinois EPA sampling team collected three groundwater samples and 28 soil/sediment/waste samples.

1.0 SITE BACKGROUND

1.1 Site Description

The Interlake Property site consists of over 289 acres of property located in a heavily industrialized area about 14 miles south of downtown Chicago (Figure 1). The Interlake Property is an inactive landfill and lagoon located west of Acme Steel (formerly Interlake Steel)(Figure 2). Most of the property is currently owned by Waste Management Inc. Much of the wastes disposed of at the site were generated during coking operations and steel manufacturing processes. Dredging material from Lake Calumet and the Calumet River was also disposed of at the property.

The property is located within the corporate city limits of Chicago (Section 13 and 24, Township 37 North, Range 14 East (Figures 1 and 2). The property is bounded by the Norfolk and Western Railroad right of way to the east and north, the Paxton Landfills to the south, and Stoney Island Avenue right of way to the west. Access to the property is restricted by the presence of a fence along the east side of the site and part of the north and south sides of the site. A locked gate is located in the southeast corner of the site.

1.2 Topography and Geology

The topography of the property is relatively flat (Figure 2). During the 1999 inspection many parts of the property contained standing water. Eighty seven acres of the site have been designated as wetlands by the Army Corps of Engineers (Figure 8). Big Marsh and several lagoons are visible on the aerial photograph in Figure 3 . Indian Treaty Creek flows south on to the property and drains into Big Marsh. The water level of Big Marsh was several feet higher during the 1999 ESI than it had been during the 1989 SSI because the drainage outfall from Big Marsh to Lake Calumet was blocked. This blockage was opened during the spring of 1999 and surface water from the property ultimately flows into Lake Calumet. During the site visits numerous people were observed fishing in Big Marsh (Appendix I). Vegetation on the property ranges from lush to sparse, a large area (837,969 ft²) located in the south-central portion of the site is barren slag with rare grass and saplings (Figure 3). Several species of waterfowl are found in and around the Interlake Property Site including egrets, ducks, shore birds, gulls and herons.

Practically the entire surface of the site is covered with slag or some form of fill. A study of the geology of the area is described in the report: Lake Calumet Area Ground-Water Quality Investigation and Monitoring Program Design for the Lake Calumet Area of Southeast Chicago, prepared for USEPA in 1990 (Reference 2) . In that document the unconsolidated deposits are described as the Lemont Till and the Wadsworth Till, overlain by the deposits of glacial Lake Chicago (Equality Formation). The Equality Formation is comprised of silt, clay and discontinuous spits and bars of sand (the Dolton Member). The Wadsworth Till Member underlies the Equality Formation and is comprised of a poorly sorted gray silty clay. The Lemont Till underlies the Wadsworth Till and is comprised of a silty poorly sorted sediment containing silt, sand and gravel. With the exception of the sand lenses in the Dolton Member the till units are relatively impermeable. Bedrock in the area consists of a Silurian Age Dolomite. The depth to bedrock at the site varies from 30 feet below ground surface in the northeast corner of the site to 100 feet below ground surface in the southeast corner of the site.

The depth to groundwater at the site ranges from about 8 feet below surface to near surface (Appendix H). Shallow groundwater flow direction is locally variable but ultimately flows toward the southwest portion of the site (Appendix H). The Silurian Dolomite is considered the major aquifer in the area. The regional groundwater flow direction for the bedrock aquifer is toward the southeast.

1.3 Site History

Waste Management purchased the site in 1981 from Interlake Companies, Inc. and other parties. The southern and eastern portions of the site were used by Interlake for the land filling of by products from their steel making and coking operations. According to Interlake records filling operations by their company began at the site in 1968. Waste streams included K063 (wean plant sludge), basic oxygen furnace dust and basic oxygen furnace slag and pickle liquor. The northeastern portion of the site was used for mining of sand and gravel. The northwestern portion of the site was used for the disposal of construction debris and dredge material from Lake Calumet and the Calumet River. The north-central portion of the site was used as an automotive junkyard. The eastern portion of the site along Stony Island Avenue has historically been prone to illegal dumping (Reference #3.). Between 1949 and 1982, about 70% of the site was used for the land filling of miscellaneous materials (Reference #4). The Calumet area was used for industrial and waste disposal as early as 1869 (Reference #5) .

1.4 Applicability of Other Statutes

Based on available information, its years of operation and the fact that many of the existing state and federal environmental regulations did not come into existence until the late 1970's and early 1980's, this facility was not subject to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Atomic Energy Act (AEA) or Uranium Mill Tailings Radiation Control Act (UMTRCA). Interlake Steel filed for a RCRA Part A application when they owned this site, the permit did not transfer to the current owner..

1.5 Previous Site Investigations

U.S. EPA inspected the facility on June 1980 and sampled during October 1980. The inspections focused on three man-made lagoons on the northeast side of the site. Two sludge and two surface water samples in that area detected heavy metal contamination ranging from 2 ppm barium to 300 ppm chromium. Chromium and copper were also found in the surface water.

When Waste Management purchased the Interlake Property in 1981 they contracted Canonic Engineers to do a hydro geologic study of the site. According to the study the lagoons in the northeastern portion of the site were estimated to be 15-20 feet deep. Groundwater samples taken during the study detected cyanide and benzene (Reference 6).

During June of 1983 U.S. EPA conducted a study for wetland and drainage areas on the southeast side of Chicago. The study area included the Interlake Property where 5 core sediment samples were taken. The following heavy metals were detected in the sediment samples: cadmium, lead, zinc, and silver. Polynuclear Aromatic Hydrocarbons (PAH's) were detected in 4 of 5 samples taken and Polychlorinated Biphenols (PCB's) were detected in one sample (Reference 1).

In July of 1989 IEPA personnel conducted a CERCLA Screening Site Inspection at the site (Reference 1). During the Inspection IEPA collected seven groundwater and eight soil samples (Figure 5) . The analytical results from that sampling event are included in Table 1 and will be discussed in Section 2.

In 1990 Waste Management entered into an agreement with the IEPA Site Remediation Program to conduct a voluntary investigation of the Interlake Property. This resulted in a removal action and a “Focused” No Further Remediation (NFR) letter for a small area of tar contamination located in the southwest portion of the property (Appendix F).

2. EXPANDED SITE INSPECTION ACTIVITIES AND ANALYTICAL RESULTS

This section contains information gathered during the preparation of the CERCLA Expanded Site Inspection conducted at the Interlake Property site. Specific activities included an internal file search, field reconnaissance inspections, site representative interviews, and field sampling activities at the facility and surrounding area.

2.1 Reconnaissance Inspection

A reconnaissance inspection of the Interlake Property site was conducted by Mark Densmore of Illinois EPA’s Site Assessment Unit on the of March 3, 1999. The reconnaissance inspection included a walk-through of the property to identify appropriate sampling locations and to conduct an X-ray fluorescence (XRF) survey. A Trimble XR Global Positioning System (GPS) was used to map the site features and the sample locations. Mark Leibrock, a representative from Waste Management, was present during the reconnaissance inspection. An additional site reconnaissance inspection was conducted by Illinois EPA personnel during March 31- April 1, 1999. The purpose of the second visit was to gather additional XRF data and to collect immunoassay PAH data. The information gathered during the two reconnaissance visits are presented in Figure 4

and Tables 2 and 3. The field characterization results will be discussed in Section 2.5.

2.2 Site Representative Interview

Prior to March 3, 1999 representatives from Illinois EPA's Site Assessment Unit contacted Mr. Mark Leibrock to explain the purpose of the CERCLA Expanded Site Inspection. During the site visit of March 3, 1999 Mr. Leibrock discussed the history of the site (described in Section 1 of this document) and showed IEPA personnel the monitoring well locations and test pit locations from previous investigations (Appendix H). Mr. Leibrock described how the water level in Big Marsh and the Lagoons at the time of the site visits were several feet higher than they had been a few years ago due to clogging of the culverts that run under Stoney Island Avenue and drain into Lake Calumet.

2.3 Ground Water Sampling

During July of 1989 personnel from the IEPA site assessment unit collected seven groundwater samples from and around the Interlake Property (Figure 5). Acetone and 2-Butanone were present in all of the SSI groundwater sample results. Trace amounts of semi-volatile compounds were detected, and metals were detected but not significantly above background. Elevated sulfate levels were detected in G102 and G106 from the 1989 SSI (Table 4).

On April 27, 1999 three groundwater samples were collected from the Interlake Property site at two locations (one of the samples was a duplicate) (Figure 5). Data from one up

gradient well from the Calumet cluster site was used as background (Figure 5). The samples were collected to determine if shallow groundwater may be impacted from Paxton 1 and Paxton 2 landfills which are located along the southern boundary of the site. The background groundwater sample LC01 was located along the northern edge of Paxton 1 and contained numerous volatile, semivolatile, pesticide and heavy metal contaminants. Groundwater samples from the 1999 ESI G102 and G103/G104 were collected along the southern part of the site. The results of these samples are discussed in Section 4.1 of this report (Groundwater Pathway). Figure 5 illustrates the approximate locations of the groundwater samples. Table 6 describes each sample with its respective location, depth, and physical appearance. Table 10 contains a summary of groundwater analytical data.

2.4 Surface Water Sampling

No surface water samples were collected during the 1989 SSI or the 1999 ESI.

2.5 Soil, Sediment, and Waste Material Sampling

During July of 1989 personnel from the IEPA collected eight soil/sediment samples on and around the Interlake Property (Figure 5 and Table 1). Acetone was present in nearly all of the sample results. Trace amounts of Methylene Chloride and 2-Butanone. Numerous semi-volatile compounds were detected. The highest semivolatile levels were detected in the northeastern quarter of the property.

Field based characterization data was collected in March 1999 using an X-Ray Fluorescence (XRF) field instrument and PAH immunoassay test kits. Significant results are presented in Tables 2 and 3. The sample locations were mapped using GPS.

A summary of the immunoassay results indicated that three of the thirteen samples screened with Immunoassay Test Kits contained total PAH concentrations above 10 ppm (Figure 4 and Table 3). Two of the samples with total PAH results above 10 ppm were collected from sediments along the west bank of the northeastern ponds. The third sample which had a concentration above 10 ppm was located in the wall of a backhoe pit located south of the northeastern ponds (depth below ground surface ~1.5 ft). Four of the remaining samples indicated total PAH levels between 1-10 ppm and three indicated total PAH levels below 1 ppm.

Eighty-five locations were characterized using XRF technology (Figure 4 and Table 2). A majority of the heavy metal detections were associated with the slag disposal areas located in the southern and south-eastern portions of the property. Lead was detected as high as 2,803 ppm, zinc as high as 14,746 ppm, chromium as high as 2,428 ppm, arsenic as high as 348 ppm and manganese as high as 38,938 ppm.

Illinois EPA personnel collected a total of twenty-eight soil, sediment, and solid waste samples (including one duplicate and one background sample) during the ESI of April 28 and 29, 1999. These samples were collected to determine if contaminants were present at the Interlake Property site or nearby targets of concern. Figure 5 indicates the location of soil, sediment, and waste material samples obtained during the ESI. Tables 4 and 5

describe each sample with its respective location, depth, and physical appearance. Tables 8 and 9 contain a summary of soil, sediment, and waste material analytical data that was collected during the ESI.

Soil/waste samples X102 through X115 were collected from fourteen locations throughout the Interlake Properties site. All soil samples were collected within the upper six inches of soil. Sample X103 was a duplicate sample of X102. Sample X101, collected approximately 1 mile south of the site, was used as a representative soil background (Figure 2).

Fifteen sediment samples were collected (Figure 5). Sediment samples X202-X215 were taken from Big Marsh and the associated ponds. Sediment sample X201 from Indian Treaty Creek was used as a comparative background sample.

2.6 Analytical Results

Following sample collection, all samples were submitted to the laboratory for analysis of Target Compound List (TCL) constituents following chain-of-custody procedures and protocols outlined in the Illinois EPA workplan. Copies of the chain-of-custody forms are provided in Appendix F (volume 2 of the Expanded Site Inspection Report). A copy of the TCL is found in Appendix C. Volatile organic analysis was conducted by U.S. EPA Central Region Laboratory. Semi-volatile organic analysis and inorganic sample analysis was conducted through the U.S.EPA Federal Contract Laboratory Program. Ammonia and sulfate analysis for groundwater samples was conducted by Illinois EPA's Division of Laboratories located in Champaign, Illinois. A quality assurance review of

the sample analysis was performed by U.S. EPA's Central Region Laboratory. Tables 4 through 9 provide a summary of those samples collected during the CERCLA Expanded Site Inspection and the corresponding analytical data which meet these criteria. The criteria used to determine what may be considered an observed release was based on those samples considered to be at least three times background concentrations.

The analytical results of the three groundwater samples do not indicate the presence of any volatile, semi-volatile organic compounds or metals of concern (Table 10). The analytical results do, however, indicate elevated concentrations of ammonia and sulfate in G103 and duplicate sample G104. Groundwater sample G101 was the background to which the sample data was compared.

The analytical results of soil samples X101 through X116 (Table 9) indicate elevated concentrations of semi-volatile compounds in samples X102/X103, X104, X105, X110. Elevated concentrations of metals were found in samples X104, X107, X108, X109, X113, X112 and X115.

The data from sediment samples X202 - X215, were compared to background sample X201 (Figure 5 and Table 8). X201 was collected from Indian Treaty Creek up-gradient from the Interlake Property. Indian Treaty Creek flows south onto the Interlake Property and drains into Big Marsh. Sediment sample X201 contained concentrations of various volatile organic, semi-volatile organic compounds and metals such as lead, manganese and zinc. The analytical results of various sediment samples X202-X214, when compared to X201 indicate elevated concentrations of the volatile organic compounds;

acetone, 2- butanone. The results indicate elevated concentrations of numerous semi-volatile organic compounds in X202, X203, X204, X207, X208, X209, X210, X211, X212, X213, X214 and X215. The analytical results indicate detections of inorganic contaminants in samples X202, X203, X204, X208, X209, X210, X211, X213, X214 and X215. The most common inorganic contaminants were lead, manganese, and zinc.

3. IDENTIFICATION OF SOURCES

This section includes descriptions of the various hazardous waste sources which have been identified at Interlake Properties during the CERCLA Expanded Site Inspection. Section 1.1 of the revised Hazard Ranking System defines a "source" as: "Any area where a hazardous substance has been stored, disposed or placed, plus those soils that have become contaminated from migration of a hazardous substance." This does not include surface water or sediments below surface water that has become contaminated. Figure 6 is a map showing the sources identified at the Interlake Property.

Information concerning the location, physical description, use, period of use, waste type and composition, size and potential to affect the migration pathways, along with analytical data obtained during the Expanded Site Inspection is presented for each source.

Note that the analytical results of the samples collected from the waste sources and targets during the ESI have been compared to the background soil sample X101, and the background sediment sample X201. While these samples are not necessarily

backgrounds for the samples obtained from the waste sources, they have been used for comparison purposes as an indication of elevated concentrations.

3.1 Slag landfill

The slag was landfilled in the south-central to southeastern portions of the subject property (Figure 6). As mentioned previously the slag was reported to have been primarily disposed of from 1968 to 1980. An approximate area for the slag is 3,136,320 ft². Elevated levels of lead, manganese, zinc are common in the slag and were found in the sediments of Big Marsh and the associated lagoons.

3.2 Tar waste (wastepile)

In the southwest portion of the site a voluntary removal action took place to remove tar waste (Figure 6 and Appendix F) . The area of the tar waste removal is 4,375 ft².

Elevated levels of PAH's were discovered in the sediments from the southeast corner of the Southwest Pond during the 1999 ESI (sample X209).

3.3 Contaminated soil

Samples between X102/X103, X104 and X105 all contained elevated PAH's (Figure 6).

The area between these three sample locations is 633,176 ft². It should be noted that Indian Treaty Creek flows through the contaminated soil area between the three sample locations. The background sample X201 was collected just up-stream of the site from the sediments in Indian Treaty Creek. The concentration of total PAH's from X201 is 13,270 ppb. Sample X203 was taken in Big Marsh near the confluence of Big Marsh and Indian

Treaty Creek. The total PAH concentration in X203 is 47,260 ppb which is more than three times the background level in X201. This data suggests that the contaminated soil area had an impact on Big Marsh.

4. MIGRATION PATHWAYS

The CERCLA Hazard Ranking System identifies three migration pathways and one exposure pathway by which hazardous substances may pose a threat to human health and/or the environment. Consequently, sites are evaluated on their known or potential impact to these four pathways. The pathways evaluated are groundwater migration, surface water migration, soil exposure and air migration.

This section includes data and information collected during the CERCLA Expanded Site Inspection together with information documented from other sources, which may be useful in analyzing the impact of the Interlake Property site on the four pathways and the various human and environmental targets within the established target distance limits.

4.1 Ground Water Pathway

Site specific geologic information was incorporated into a groundwater quality investigation of the Lake Calumet area (Reference 2). Fill material was discovered to range from 2 to 3 meters thick. The fill material consisted of steel mill slag and construction debris. In some areas dredge spoils from Lake Calumet and the Calumet River were used as fill. Beneath the fill material are glacial silt, clay and sand deposits ranging in thickness from 22 to 30 feet. Beneath the unconsolidated glacial deposits is the

Silurian Dolomite bedrock. It is within this horizon that on-site monitor wells were installed. Information gathered during monitor well installation, it has been estimated that groundwater flow appears to be in a southwesterly direction. An area groundwater study indicates that as of 1991 the 2 closest residential water wells were one approximately 1 mile northeast from the site (water use unknown), and the other approximately one mile southwest from the site (water use unknown) (Reference 2). The groundwater flow direction for the shallow groundwater flows toward the southwest but the residential well on that side of the site is on the other side of Lake Calumet and the shallow groundwater is almost certainly intercepted by the lake. The groundwater flow direction for the bedrock aquifer is toward the southeast (Appendix H) .

Groundwater is rarely, if ever, utilized for potable drinking water within four miles of the Interlake Property site. Drinking water for the area is supplied from Lake Michigan. The following table depicts and estimation of the number of groundwater wells located within 4-miles of the site.

Number of wells and users within 4-miles of
Interlake Property

Distance (mi)	Private Wells	Population Served
0 - 1/4	--	--
1/4 - 1/2	--	--
1/2 - 1	--	--
1 - 2	2	unknown
2- 3	unknown	unknown
3- 4	unknown	unknown

There is the possibility of a groundwater to surface water pathway for contamination at the site. Potentiometric maps of the site clearly show the shallow groundwater flowing toward (and recharging) Big Marsh and the associated ponds (Appendix H). Additional technical information supporting the groundwater to surface water pathway is discussed in a Masters Degree Thesis by Kenneth G. Duwal titled; EVENT-BASED AND SEASONAL PRECIPITATION EFFECTS ON SHALLOW GROUND WATER-WETLANDS INTERACTIONS NEAR LAKE CALUMET, SOUTHEAST CHICAGO, ILLINOIS (Reference 7). The onsite monitoring wells which were sampled were compared to background groundwater sample LC01 which is located along the north side of Paxton 1 Landfill. None of the contaminants detected in the onsite wells exceeded the contaminants in the background well and the contaminant levels in the onsite wells were below the USEPA Superfund Removal Action Limit (RAL) for drinking water. Background sample LC01 on the other hand exceeded both the Superfund RAL's and the 620 Illinois Standards for Class 1 Groundwater.

4.2 Surface Water

Based on site drainage observed during the site reconnaissance, ESI and on aerial photographs of the site and surroundings, one probable point of entry (PPE) to surface water is at the confluence of Indian Treaty Creek and Big Marsh. The 15-mile in-water segment of the surface water route is the Calumet River. Based on IEPA data, there are no known surface water intakes within fifteen miles downstream (of the PPE) of the site. Therefore, there is little or no threat to the surface water drinking water pathway.

During the 1989 SSI and during the 1999 ESI fieldwork numerous people were observed fishing in Big Marsh. In the 1989 SSI it was mentioned that people were observed taking home Bullhead Catfish (Reference 1, Appendix I) . Therefore Big Marsh is a fishery and the site presents a threat to the surface water human food chain pathway. Based on information from the IDOC National Wetlands Inventory (Reference 6), sensitive environments exist on site property as a wetlands (palustrian, forested, broad-leafed deciduous, temporarily flooded) and ponds (palustrian, unconsolidated bottom, intermittently exposed). The approximate area of the wetlands on the site is 87 acres (Reference 1 and Figure 7). The approximate wetland frontage is 3.3 miles (Figure 7).

4.3 Soil Exposure

The analytical data generated from soil samples taken during the Expanded Site Inspection of Interlake Properties indicates that the soil, sediments and wastes at the site contain significant concentrations of contaminants within two feet of the surface. These sample results indicate an observed release to the soil exposure pathway by contaminants that are attributable to the sites' former activities. Nearly all of the site is accessible, some portions more difficult than others. As mentioned earlier the eastern side of the property is fenced. However, numerous people were observed on the property, many along the banks of Big marsh fishing, but there is also evidence of hunters on the property based upon the numerous spent shotgun shells found throughout the property. There are no schools or day care facilities on-site or within 200 feet of contaminated areas. There are no persons living on or within 200 feet of contaminated areas. Persons performing any excavation/construction tasks in the future have a high potential for contact of waste,

contaminated soil and inhalation of contaminated air.

Nearby population within 1-mile of the site

Distance(mi)	Population
1- 1/4	unknown
1/4 - 1/2	unknown
1/2 - 1	3,446
Total	3,446

The number of people was calculated using 2.5 persons per household in County, as established by the U.S. Census Bureau. The average persons per home in County, is not known therefore the same 2.50 average was applied.

4.4 Air Route

During the course of the Expanded Site Inspection there were no formal air samples collected. There are no records, reports or complaints of air releases from the site.

Based on the analytical results of soil and waste material samples collected during the ESI, the potential for wind blown particulates to carry contaminants off of the property is possible since these contaminants have been found in the top six inches of soil on the property. In addition, some of these areas contain sparse vegetation, if there is any vegetation at all. Any traffic over such areas raises dust, when dry.

The nearest individual and regularly occupied structure is any one of the residences within 1/4 mile east of the site. There are no employees currently working at the site.

The approximate number of individuals potentially exposed to air- borne particulates are listed in the table below.

Individuals potentially exposed to air-borne contaminants

Distance (mi)	Population
0 - 1/4	2.5
1/4 - 1/2	unknown
1/2 - 1	3,446
1 - 2	10,000
2 - 3	unknown
3 - 4	unknown
Total	>10,000

The number of people was calculated using 2.5 persons per household in County, as established by the U.S. Census Bureau. The average persons per home in County, is not known therefore the same 2.50 average was applied.

5.0 ADDITIONAL RISK-BASED OBJECTIVES

This section discusses additional screening objectives used to evaluate the Interlake Property site. These objectives have not been used to assess the site for Hazard Ranking System (HRS) purposes.

5.1 Tiered Approach to Corrective Action Objectives (TACO)

The Illinois EPA's TACO guidance document (effective July 1, 1997, under 35 IL Adm. Code Part 742), can be used to develop site specific remediation objectives for sites being addressed under the states Site Remediation Program. This document discusses key elements required to develop risk-based remediation objectives, how background values may be used, and provides guidance through three tiers of the risk-based approach. The Illinois EPA uses this guidance, and the groundwater standards established in 36 IL Adm.

Code 620, to determine soil and groundwater remediation objectives.

5.1 TACO Soil Objectives

The soil contaminants from the site will be compared to the soil remediation objectives established for industrial/commercial properties, with the inhalation, ingestion, and migration to groundwater pathways each evaluated. Tier 1 consists of “look-up” tables, which considers limited site-specific information and are based on simple numeric models. The following table compares key contaminants to Tier 1 objectives only.

5.1 TACO Groundwater Objectives

Groundwater beneath this site has been classified as Class 1 groundwater by the IEPA Site Remediation Program. The decision was based upon hydro-geological data which shows a groundwater - surface water pathway exists on the site which could influence Big Marsh and the associated wetlands. This relationship should be further studied to determine if contaminant transport is impacting the wetlands. Table 10 depicts those contaminants which exceed Class 1 groundwater objectives.

5.2 Ontario Aquatic Sediment Quality Guidelines

The concentrations of contaminants found in the sediment samples of Big Marsh and the associated ponds and lagoons were compared to Ontario Aquatic Sediment Quality Guidelines. These sediment quality guidelines are non-regulatory ecological benchmark values that serve as indicators of potential aquatic impacts. The Lowest Effect Level (LEL) indicates sediment contamination that can be tolerated by the majority of the

benthic organisms. The Severe Effect Level (SEL) represents heavily polluted conditions that are expected to be detrimental to the health of benthic organisms. Several sediment samples from Big Marsh and the associated ponds contained contaminant levels above the severe effect level for benthic organisms. Background sediment sample X201 also exceeded the severe effect level for benthic organisms (Table 11).

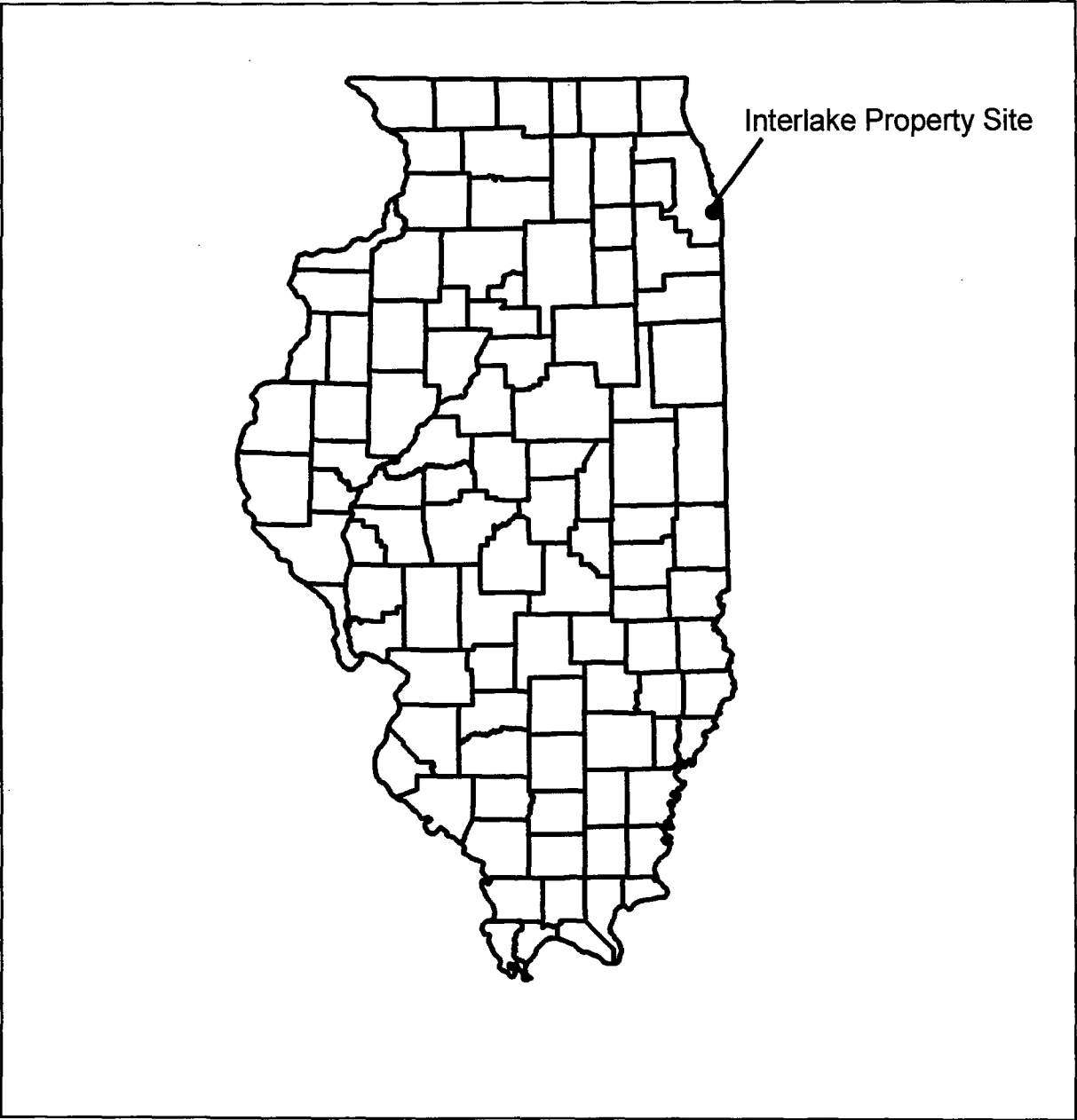
5.3 Ecotox Thresholds

USEPA Ecotox Thresholds are ecological benchmarks that are media-specific contaminant concentrations and are used as an indicator of possible adverse ecological effects that may warrant further site investigation. Ecotox Thresholds are to be used for screening purposes and are not regulatory criteria, site-specific cleanup standards or remediation goals. The Table 11 illustrates the sediments samples compared to USEPA ECOTOX thresholds.

6. REFERENCES

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6. Illinois Department of Conservation, National Wetlands Inventory, 1991.
7. Illinois Environmental Protection Agency, Division Files from Land, Water, Air and Office of Chemical Safety.
8. Illinois Environmental Protection Agency, Division of Public Water Supplies; List of Public Water Supplies Utilizing Surface Water.
9. Illinois State Geological Survey, Bulletin 95, Handbook of Illinois Stratigraphy.

Figure 1. State map of Illinois showing the location of the Interlake Property Site.



 Counties

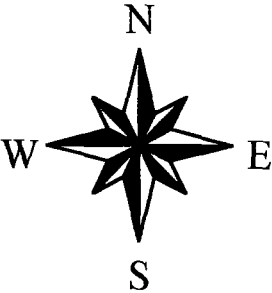
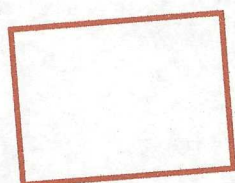
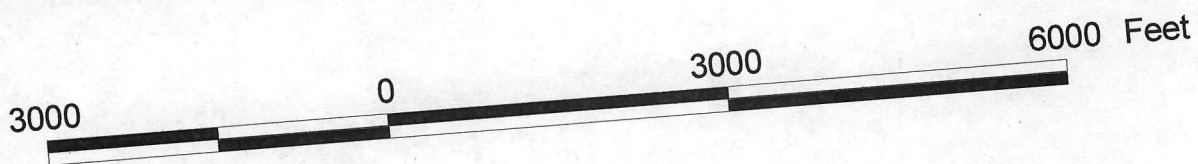
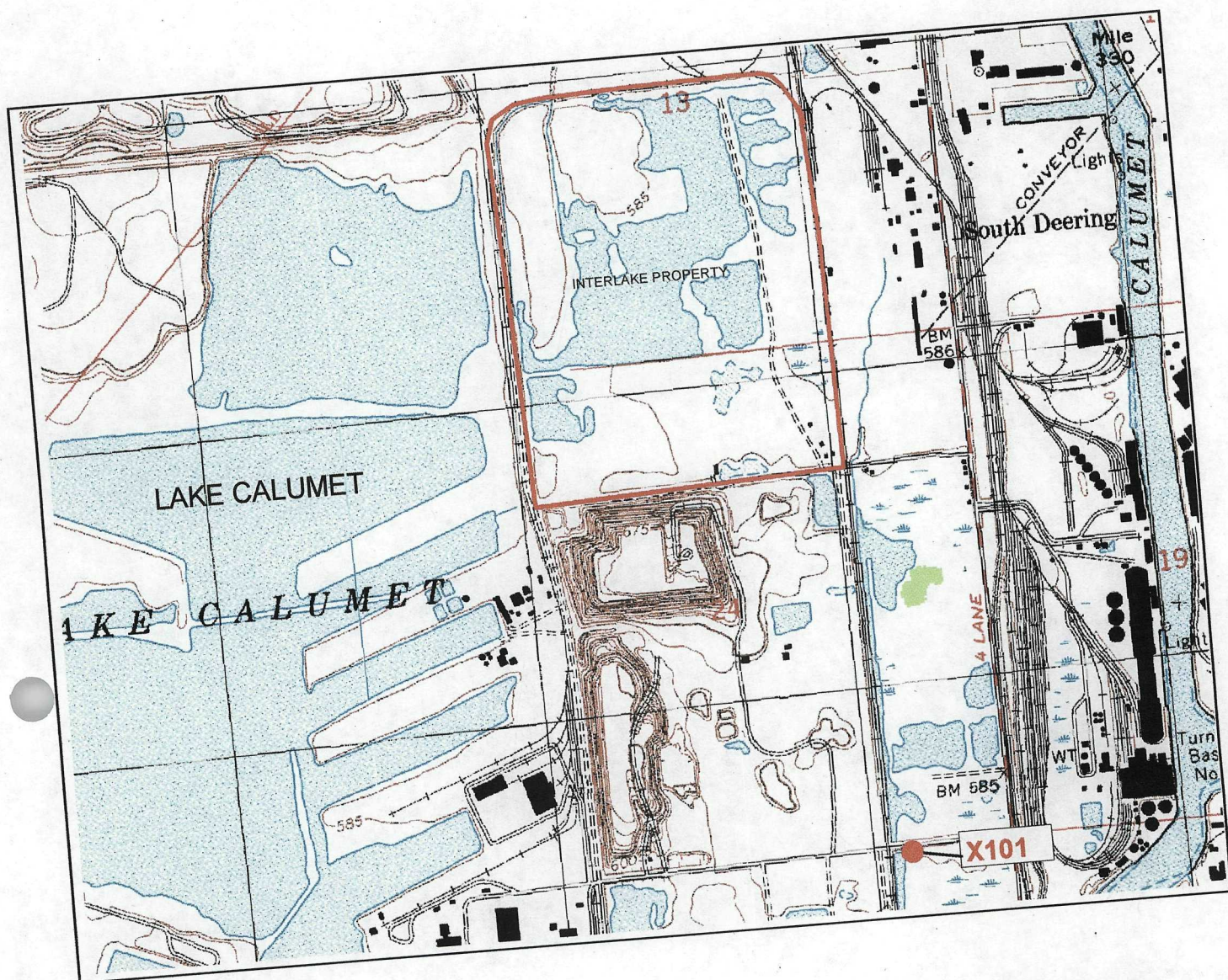


FIGURE 2 . Topographic map of the area around the Interlake Property site.
The location of background soil sample X101 is shown.



Interlake Property site



Figure 3. Aerial photograph showing the Interlake Property and the surrounding area. Major types of waste observed in each area are annotated.



WATERLINE AS OF 4-1-99



North

Figure 4. Aerial photograph showing the Interlake Property and the locations where field based characterization methods were used. Key results are annotated on the photo.

Metals results based upon XRF data/PAH results based upon Immunoassay

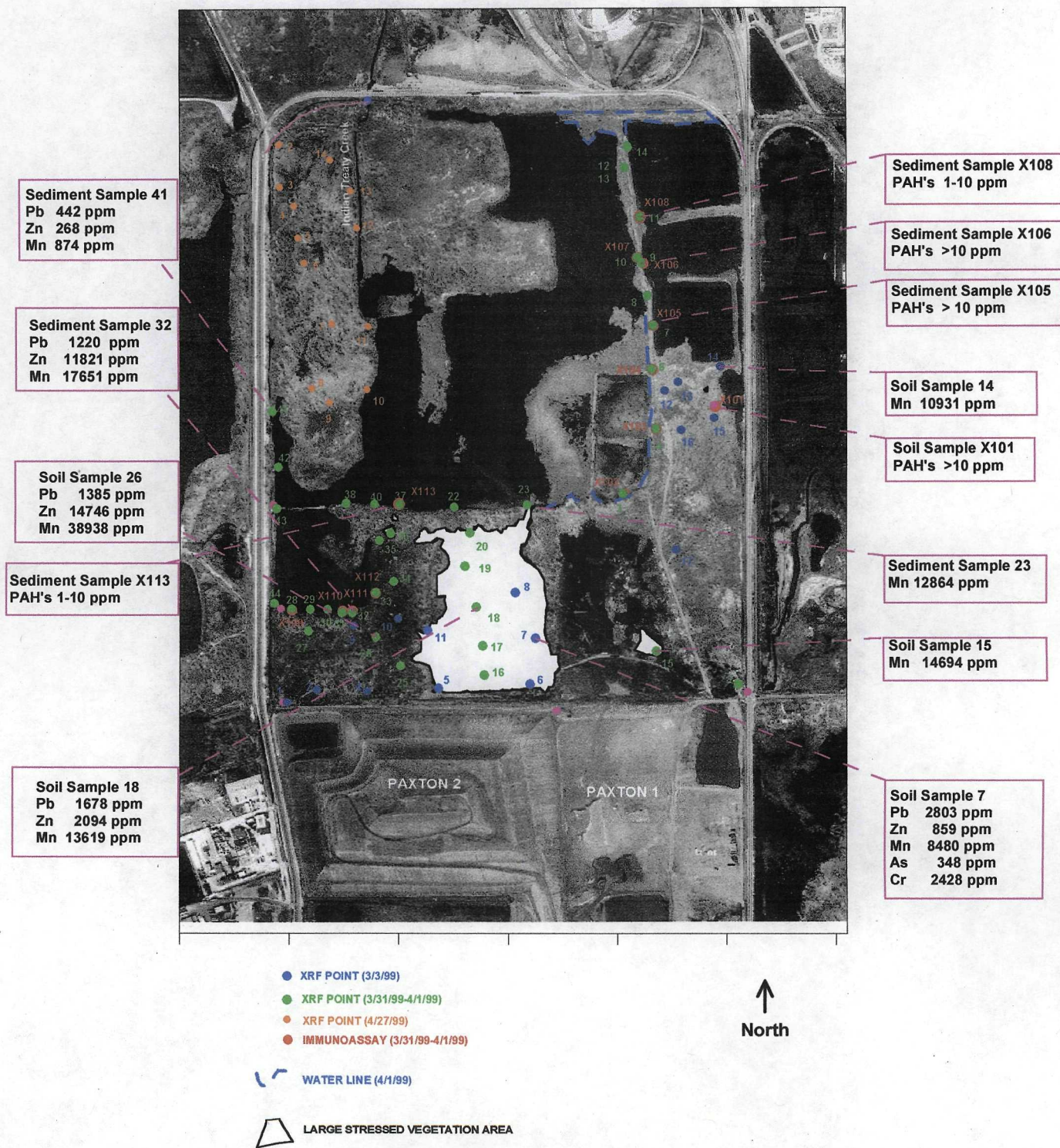


Figure 5. Aerial photograph showing the locations where samples were collected during the 1989 SSI and the 1999 ESI.



- SOIL SAMPLE (Background X101 outside photo boundary)
- SEDIMENT SAMPLE
- MONITORING WELL SAMPLE
- SAMPLE COLLECTED DURING THE 1989 SSI

↑
North

⋮ WATERLINE AS OF 4-1-99

Figure 6. Aerial photograph showing the Interlake Property site, sample locations and key source areas.



- SOIL SAMPLE (Background X101 outside photo boundary)
- SEDIMENT SAMPLE
- MONITORING WELL SAMPLE
- SAMPLE COLLECTED DURING THE 1989 SSI

□ SOURCE AREA

↑
North

Figure 7. Wetland map showing the Interlake Property site boundary and the area measured as wetland frontage. See next page for wetland definitions.

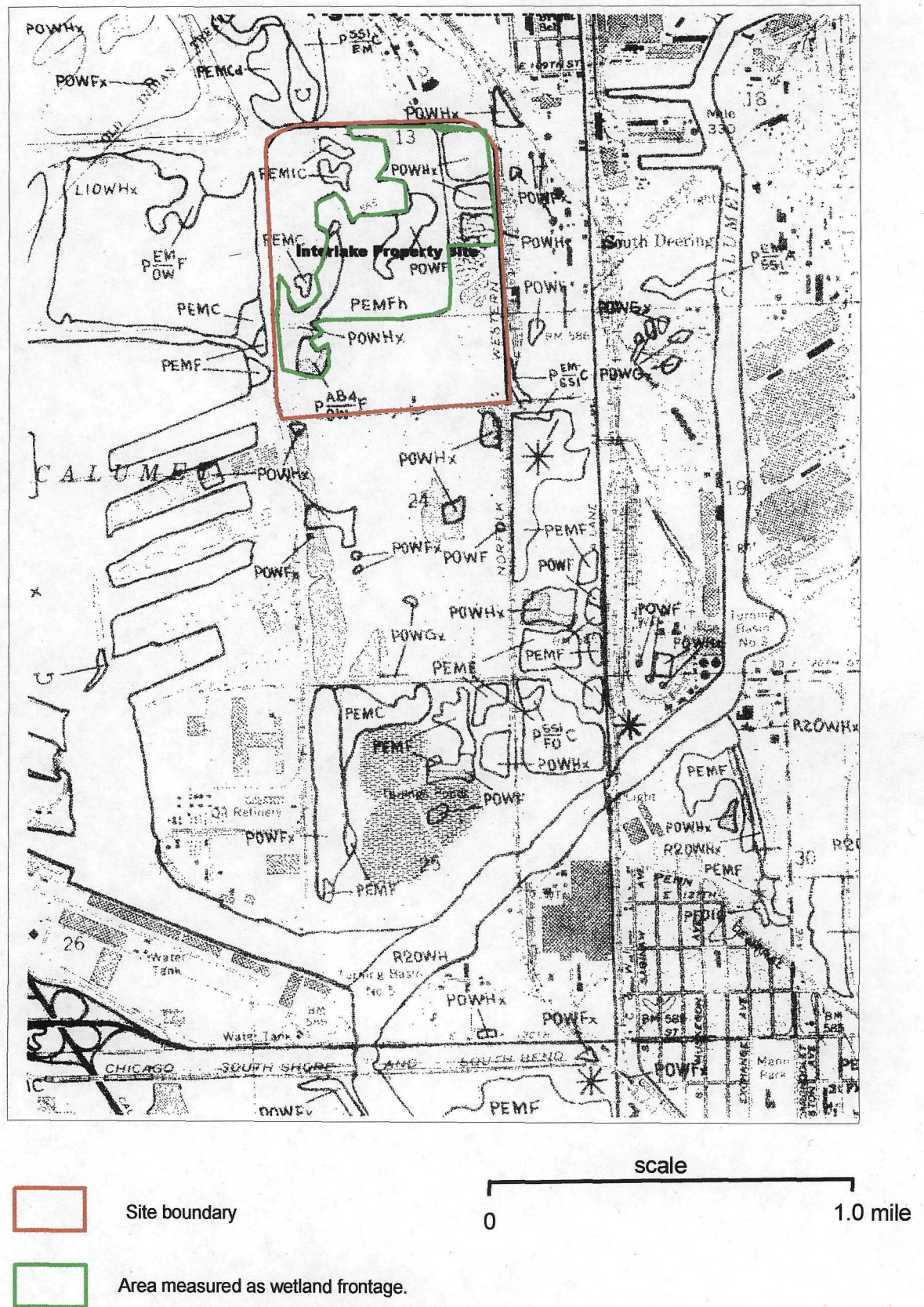
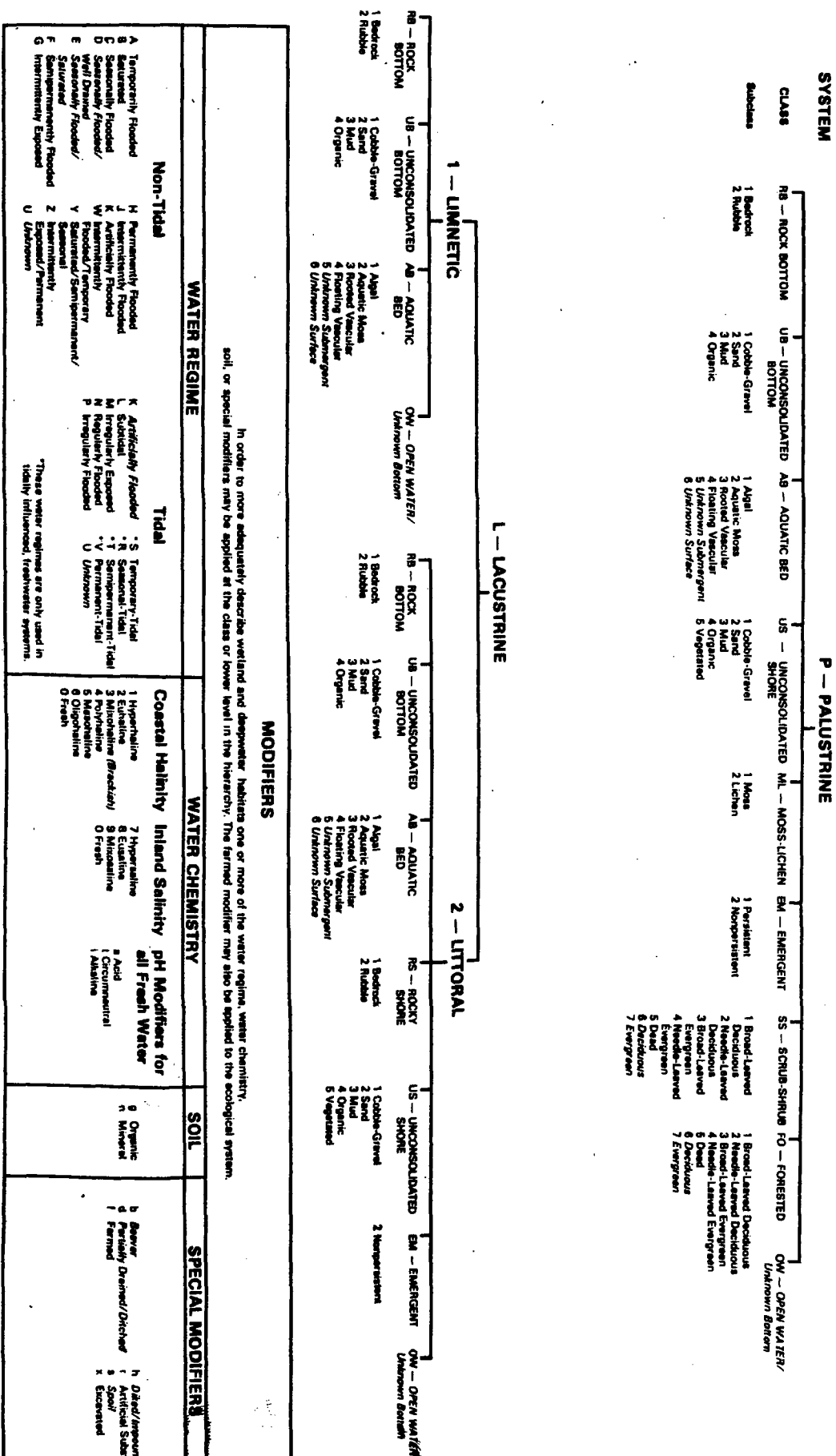


Figure 7. continued



INTERLAKE PROPERTY WMI
ILD 000810432

TABLE 1

SAMPLING POINT
PARAMETER

G101 07-19-89 G102 07-19-89 G103 07-20-89 G104 07-20-89 G105 07-19-89 G106 07-19-89 G107 07-18-89 X101 07-19-89 X102 07-19-89 X103 07-19-89

VOLATILES

Methylene Chloride	3.0 J	--	--	0.9 J	4.0 J	--	--	2.0 J	4.0 J	2.0 J
Acetone	76.0 DJ	3200.0 D	300.0 D	99.0	880.0 DJ	11000.0 D	91.0	--	130.0 J	80.0 J
2-Butanone (MEK)	50.0 R	2500.0 R	50.0 R	10.0 R	50.0 R	500.0 R	10.0 R	--	9.0 J	--
2-Hexanone	--	--	--	--	--	--	--	--	48.0	--
Toluene	--	--	--	--	--	--	--	--	--	--
Xylene(total)	--	--	--	--	--	--	--	--	0.5 J	--

SEMIVOLATILES

2-Methylphenol	--	--	--	--	--	--	--	--	--	--
4-Methylphenol	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	0.2 J	--	760.0 J	--	210.0 J
4-Chloro-3-Methylphenol	--	0.3 J	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	330.0 J	--	160.0 J
Acenaphthylene	--	--	--	--	--	--	--	--	--	26.0 J
Acenaphthalene	--	--	--	--	--	--	--	--	--	270.0 J
Dibenzofuran	--	--	--	--	--	--	--	130.0 J	--	200.0 J
Diethylphthalate	--	0.7 J	2.0 J	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	360.0 J	--	360.0 J
Phenanthrene	--	0.4 J	--	--	--	0.5 J	--	610.0 J	--	5200.0
Anthracene	--	--	--	--	--	--	--	48.0 J	--	810.0 J
Di-n-Butylphthalate	--	0.2 J	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	970.0 J	--	5100.0
Pyrene	--	--	--	--	--	--	--	880.0 J	--	4600.0
Benzo(a)anthracene	--	--	--	--	--	--	--	640.0 J	--	4500.0
Chrysene	--	--	--	--	--	--	--	420.0 J	--	4500.0
bis(2-Ethylhexyl)phthalate	--	0.2 J	1.0 J	--	9.0 J	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	510.0 J	--	7400.0
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--	3700.0
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	4100.0
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	--	--	--	--

4-4

PESTICIDES

gamma-BHC (Lindane)	--	--	--	--	--	--	--	--	69.8 J	--
4,4'-DDE	--	--	--	--	--	--	--	54.9 J	52.1 J	11.3 J
4,4'-DDD	--	--	--	--	--	--	--	42.9 J	276.5 J	29.9 J
4,4'-DDT	--	--	--	--	--	--	--	33.3 J	79.9 J	17.0 J

INTERLAKE PROPERTY WMI
ILD 000810432

TABLE 1

SAMPLING POINT
PARAMETER

	G101 07-19-89	G102 07-19-89	G103 07-20-89	G104 07-20-89	G105 07-19-89	G106 07-19-89	G107 07-18-89	X101 07-19-89	X102 07-19-89	X103 07-19-89
INORGANICS										
Aluminum	110.0 B	210.0	260.0	149.0	140.0	720.0	90.0	51000.0	5600.0	6400.0
Antimony	--	--	--	--	--	--	--	--	--	0.7 B
Arsenic	--	--	--	--	--	3.0 B	--	4.8	7.6 B	5.1
Barium	21.0 B	79.0 B	14.0 B	23.0 B	21.0 B	28.0 B	24.0 B	520.0	144.0	83.0
Beryllium	--	--	--	--	--	--	--	7.3	0.4	0.9 B
Cadmium	--	--	--	--	--	2.8 B	--	0.7 B	0.7	1.9
Calcium	8900.0	87000.0	13500.0	20000.0	19000.0	11000.0	5100.0	236000.0	104000.0	107000.0
Chromium	--	--	--	--	--	--	--	33.0	21.0	98.0
Cobalt	--	--	--	--	--	--	--	3.9 B	2.3 B	4.2 B
Copper	--	--	--	--	--	--	--	16.0	24.0	49.0
Iron	--	--	150.0	56.0 B	--	1100.0	8.4 B	16900.0	21000.0	46000.0
Lead	23.0	36.0	3.0 B	6.0	13.0	38.0	99.0 B	20.0	76.0	128.0
Magnesium	3400.0 B	35000.0	5000.0 B	13000.0	3300.0 B	4500.0 B	3300.0 B	24000.0	10500.0	27000.0
Manganese	4.7 B	110.0	11.0 B	27.0 B	3.9 B	40.0 B	5.2 B	5100.0 B	900.0	4500.0
Mercury	1.3	1.1	1.3	1.3	1.3	1.2	1.4	--	--	0.2
Nickel	--	8.9 B	7.8 B	7.7 B	--	9.4 B	5.1 B	11.0	13.0 B	17.0
Potassium	1400.0 B	7300.0	2500.0 B	6600.0	2600.0 B	3700.0 B	2200.0 B	3100.0	680.0	1300.0
Selenium	--	--	--	--	--	--	--	4.6	--	--
Silver	--	--	--	--	--	--	--	2.0 B	--	--
Sodium	105000.0	59000.0	107000.0	121000.0	94000.0	96000.0	78000.0	1600.0	940.0	560.0 B
Vanadium	--	--	--	--	--	--	--	34.0	22.0	111.0
Zinc	--	16.0 B	--	--	--	--	260.0	120.0	200.0	155.0
Cyanide	--	--	--	--	--	--	--	1.6	--	--
Sulfate	--	173000.0	--	--	--	13000.0	--	--	--	--
TEMPERATURE	53.2	52.5	53.7	53.6	53.0	53.7	61.4	--	--	--
SP. COND.(umhos)	481.0	849.0	507.0	688.0	583.0	477.0	430.0	--	--	--
PH	8.4	7.5	8.3	8.1	9.1	8.5	8.8	--	--	--

Table 1

INTERLAKE PROPERTY WMI
ILD 000810432

SAMPLING POINT PARAMETER	X104 07-19-89	X105 07-19-89	X106 07-19-89	X107 07-19-89	X108 07-18-89
VOLATILES					
Methylene Chloride	2.0 J	3.0 J	3.0 J	36.0 J	3.0 J
Acetone	110.0 J	49.0 J	62.0 J	5000.0	
2-Butanone (MEK)	22.0 R	12.0 R	2.0 J	310.0 J	10.0 R
2-Hexanone	--	--	--	--	--
Toluene	--	--	1.0 J	--	--
Xylene(total)	--	--	--	--	--
SEMIVOLATILES					
2-Methylphenol	--	--	--	120.0 J	--
4-Methylphenol	--	--	--	5000.0	--
Naphthalene	88.0 J	96.0 J	--	1200.0 J	84.0 J
4-Chloro-3-Methylphenol	--	--	--	--	--
2-Methylnaphthalene	--	66.0 J	--	--	--
Acenaphthylene	--	--	--	--	--
Acenaphthalene	--	--	--	--	--
Dibenzofuran	--	78.0 J	29.0 J	150.0 J	--
Diethylphthalate	--	--	21.0 J	--	--
Fluorene	--	130.0 J	25.0 J	93.0 J	--
Phenanthrene	240.0 J	1600.0	540.0 J	690.0 J	260.0 J
Anthracene	--	250.0 J	90.0 J	51.0 J	--
Di-n-Butylphthalate	--	--	--	--	--
Fluoranthene	370.0 J	2900.0	990.0	--	590.0 J
Pyrene	330.0 J	2700.0	940.0	--	670.0 J
Benzo(a)anthracene	--	2800.0	460.0 J	--	40.0 J
Chrysene	--	2300.0	410.0 J	--	290.0 J
bis(2-Ethylhexyl)phthalate	--	--	--	--	--
Benzo(b)fluoranthene	--	5000.0	430.0 J	--	--
Benzo(k)fluoranthene	--	3400.0	--	--	--
Benzo(a)pyrene	--	4600.0	--	--	--
Indeno(1,2,3-cd)pyrene	--	4800.0	--	--	--
PESTICIDES					
gamma-BHC (Lindane)	--	--	--	--	--
4,4'-DDE	64.6 J	--	--	--	9.8 J
4,4'-DDD	168.4 J	--	--	--	--
4,4'-DDT	24.4 J	--	--	--	25.9 J

Table 1

INTERLAKE PROPERTY LMI
ILD 000810432

PARAMETER	SAMPLING POINT			
	X105 07-19-89	X106 07-19-89	X107 07-19-89	X108 07-18-89
INORGANICS				
Aluminum	8800.0	4900.0	770.0	5900.0
Antimony	--	--	--	--
Arsenic	3.6	2.7	2.9 B	4.9
Barium	220.0	75.0	150.0	122.0
Beryllium	1.6	0.4 B	--	0.5 B
Cadmium	18.0	0.7 B	--	1.1
Calcium	110000.0	66000.0	340000.0	14000.0
Chromium	710.0	21.0	5.0 B	35.0
Cobalt	15.0	3.8 B	--	3.8 B
Copper	52.0	13.0	3.8 B	54.0
Iron	25000.0	14000.0	3800.0	23000.0
Lead	110.0	40.0	--	132.0
Magnesium	23000.0	30000.0	41000.0	7400.0
Manganese	1100.0	1800.0	260.0	1800.0
Mercury	0.2	0.3	--	0.1
Nickel	69.0	9.6	11.0 B	31.0
Potassium	600.0 B	860.0 B	--	880.0
Selenium	--	--	--	--
Silver	2.8	--	--	--
Sodium	480.0 B	580.0 B	520.0 B	240.0 B
Vanadium	170.0	28.0	2.0	18.0
Zinc	160.0	77.0	43.0	150.0
Cyanide	0.7	--	4.2	--
Sulfate	--	--	--	--
TEMPERATURE				
SP. COND. (umhos)				
PH				

BULK

Site:

Ranges (NEG<INC<P)

[illegible]

Table 2. XRF data for the Interlake Property Site.

Header

Barnes NEG-INC <POS: 0.0<1.00<1.00 Times: minL = 20 Ssec minK = 120 Ssec
 Date: 4/1/99 to 4/1/99

Language (English) - 20 0000 000000 - 120 0000

[illegible]

Table2.XRF data for the Interlake Property Site.

BULK

Header:

Site:

Date: 4/27/99 to 4/27/99

Ranges (NEG<INC<POS), 0.0<1.00<1.00 Times: minL = 20 Ssec minK = 120 Ssec

XLNo	Mo ± Pr	Mo ± Pr	Zr ± Pre	Zr ± Pre	Sr ± Pre	Sr ± Pre	Rb ± Pr	Rb ± Pr	Pb ± Pr	Pb ± Pre	As ± Pre	As ± Pre	Hg ± Pr	Hg ± Pr	Zn ± Pre	Zn ± Pre	Cu ± Pr	Cu ± Pr	Ni ± Pre	Ni ± Pre	Co ± Pr	Co ± Pr	Fe ± Pre	Fe ± Pre	Mn ± Pr	Mn ± Pr	Cr ± Pre	Cr ± Pre
2	0.8	11	43.9	13.2	30.1	16.5	50	20.7	80.9	33.1	-18.7	35.5	20.5	28.3	112.4	43.7	-11.3	71.9	64.2	108.9	-45	216.2	7929.6	626.8	462.4	695.2	-516	432
3	10.9	11.3	60.9	13.7	22	15.8	48.8	20.2	64.4	31.8	-6.8	34.1	-10.2	25.7	83.7	41.7	23.3	72.2	67.4	107	-80.3	206.2	7392	599.2	497.6	678.4	-103.8	449.6
4	0.9	12.3	97.5	16.5	33.7	18.1	86	23.5	19.2	33.8	-6.5	36.4	34.1	30.8	73.5	45.5	10	79.9	4.4	128.6	206.6	274.2	10790.4	784.8	349.6	849.6	121.8	550
5	8.2	11.9	70.7	14.9	32.7	17.5	34.7	20.9	189	39.1	8.7	43.9	28.2	34.2	208.8	53	74.2	84.5	-61.7	114.2	252.6	229	7040	628	430.4	698.8	-286.2	454
6	-14.3	20.6	32.3	24	57.8	32.3	-6.3	34.5	264.6	72.4	73.2	85.4	20.2	67.8	343	107.5	91.5	178.7	11.6	304.4	112.2	720.8	38732.8	2388.8	2540.8	2433.6	6364.8	1739.2
7	-16.1	10.9	64.5	14.7	62.8	18.6	26.2	20.6	173.2	37.9	19.1	42.9	12.7	32.7	155.2	49.1	43.6	79.4	-38.9	110.8	53.6	225	7788.8	643.2	542	724	-115.8	478
8	3	14.5	44.8	17.1	49.1	22.1	-2.9	23.3	172.2	46	-18.6	51.2	24.9	40.7	163.6	61.7	-4.8	102.8	14.8	183.2	518.8	344.2	11763.2	960.8	1392.8	1086.4	721.6	749.2
9	16.7	13.2	140.2	18	10.8	16.9	6.2	19.5	65.4	33.9	-3.9	37.9	9.1	31	152.5	51.1	-1.9	82.7	25	118.2	106	227.6	6786.4	634.8	738.8	730.4	-245.4	486.4
10	4.4	13.3	37.4	15.5	64.2	21	24.2	23.2	59	37.4	-17.8	40.6	15.8	33.1	74.1	50.3	23.6	89.6	99.2	131.9	38.6	239.2	6486.4	670	389	782.4	945.6	593.2
11	-1.7	11.6	66.1	14.9	47.7	18.2	42.2	21.6	110.7	36.2	19.3	40.7	16.7	32.3	208.4	53	25.7	83.1	7.3	115.8	65.4	230	7776	656.8	1120.8	762.4	-259.6	504.4
12	6.9	10	37.4	11.7	29.2	14.8	18.5	16.9	87.3	29.1	5.3	32.7	20.2	26.4	157.9	42	5.6	65.8	9.1	88	71.5	159.3	3910.4	432.8	947.2	530	-468.8	363.2
13	4.6	11.2	59.5	13.8	36.1	16.7	34.1	19.9	112.5	34.1	-22.5	36.9	29.4	29.5	120.6	44.6	-13.4	73.8	149.3	111.6	-94.2	206.4	7244.8	594.4	-309.2	638.4	3.1	418
14	10.7	12.1	43.3	14.1	25.3	17.2	12.1	19.6	133.9	36.5	4.5	41	4.2	31.5	141.1	48	-52.9	73.1	84.3	107.2	-18.8	188.8	4438.4	523.2	624	-324.4	430.8	

Interlake Property Site

Table 4. Soil sample descriptions.

Sample number	Sample location	Sample description
X101	Located about 3/4 mile south of the site, south of 122nd Street and east of the RR tracks.	Collected 0-4 inches deep. The soil sample consisted of a dark sandy loam.
X102/X103	Located in the northwest part of the site.	Collected 0-4 inches deep. The soil sample consisted of a dark loam.
X104	Located in the north-central part of the site.	Collected 0-4 inches deep. The soil sample consisted of a dark loam with urban debris.
X105	Located in the west-central part of the site, from the north bank of Big Marsh.	Collected 0-4 inches deep. The soil sample consisted of dark silty material.
X106	no sample	
X107	Located in the south-west part of the site in an area of stressed vegetation.	Collected 0-4 inches deep. The sample consists of weathered orange weathered slag and silt sized material.
X108	Located in the central part of the site, from the north part of an area of stressed vegetation.	Collected 0-3 inches deep. The sample consisted of small, gray slag and silt sized material.
X109	Located in the central part of the site, from the east part of an area of stressed vegetation.	Collected 0-3 inches deep. The sample consisted of slag and dark sand sized material.
X110	Located in the intermittent drainage way near the Paxton 2 Landfill.	Collected 0-4 inches deep. The sample consisted of light gray/brown silty clay.
X111	Located in a marshy area near the south-central part of the site.	Collected 0-6 inches deep. The sample consisted of a dark organic rich silt.
X112	Located in the south-central part of the site, along a lane in a marshy area.	Collected 0-4 inches deep. The sample consisted of dark gray slag pieces and organic material.
X113	Located the south-eastern part of the site.	Collected 0-4 inches deep. The sample consists of red gravel, sand and silt sized material.
X114	Located in the east-central part of the site in an area of stressed vegetation.	Collected 0-4 inches deep. The sample consisted of dark grey sand sized material.
X115	Located in the east-central part of the site near a backhole pit.	Collected 0-4 inches deep, and the organic sample was collected from the dark layer 1-2 feet deep.

Interlake Property Site

Table 5. Sediment sample descriptions.

Sample number	Sample location	Sample description
X201	Located in Indian Treaty Creek just north of the site property.	Collected 0-8 inches deep. The sample consisted of a black silty material.
X202	Located in the north-central part of site. The sample was taken in Big Marsh.	Collected 0-8 inches deep. The sample consisted of black silty material. The sample had a petroleum odor.
X203	Located in the northeast part of the site. The sample was taken in Big Marsh.	Collected 0-8 inches deep. The sample consisted of black silty material. The sample had a petroleum odor.
X204	Located in the north-central part of the site. The sample was taken in Big Marsh.	Collected 0-8 inches deep. The sample consisted of black silty material.
X205	Located in the central part of the site. The sample was taken in Big Marsh.	Collected 0-8 inches deep. The sample consisted of black silty material.
X206	Located in the south-central part of the site. The sample was taken in Big Marsh.	Collected 0-8 inches deep. The sample consisted of black silty material and slag.
X207	Located in the east-central part of the site. The sample was taken in Big Marsh.	Collected 0-8 inches deep. The sample consisted of black silty material. The sample had a petroleum odor.
X208	Located in the southwest part of the site. The sample was taken in the Southwest Pond.	Collected 0-8 inches deep. The sample consisted of black silty material.
X209	Located in the southwest part of the site. The sample was taken in the Southwest Pond.	Collected 0-8 inches deep. The sample consisted of red and black silty material and slag.
X210	Located in southwest part of site. The sample was taken just north of Paxton 2 Landfill.	Collected 0-4 inches deep. The sample of brown silty material. Brown seeps were coming out of the north bank of the ditch.
X211	Located in the northeast part of the site. The sample was taken in one of the northeast ponds.	Collected 0-8 inches deep. The sample consisted of black silt and slag.
X212	Located in the northeast part of the site. The sample was taken in one of the northeast ponds.	Collected 0-8 inches deep. The sample consisted of black silty material.
X213	Located in the northeast part of the site. The sample was taken in one of the northeast ponds.	Collected 0-8 inches deep. The sample consisted of black silty material.
X214	Located in the northeast part of the site. The sample was taken in one of the northeast ponds.	Collected 0-8 inches deep. The sample consisted of black silty material, slag and plant material.
X215	Located southwest from the site. The sample was taken from Lake Calumet near the outfall for Interlake Property drainage.	Collected 0-8 inches deep. The sample black silty material.

Interlake Property Site

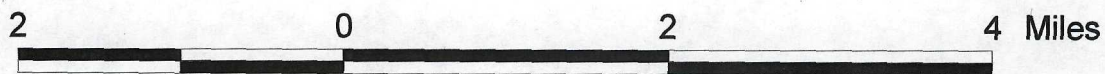
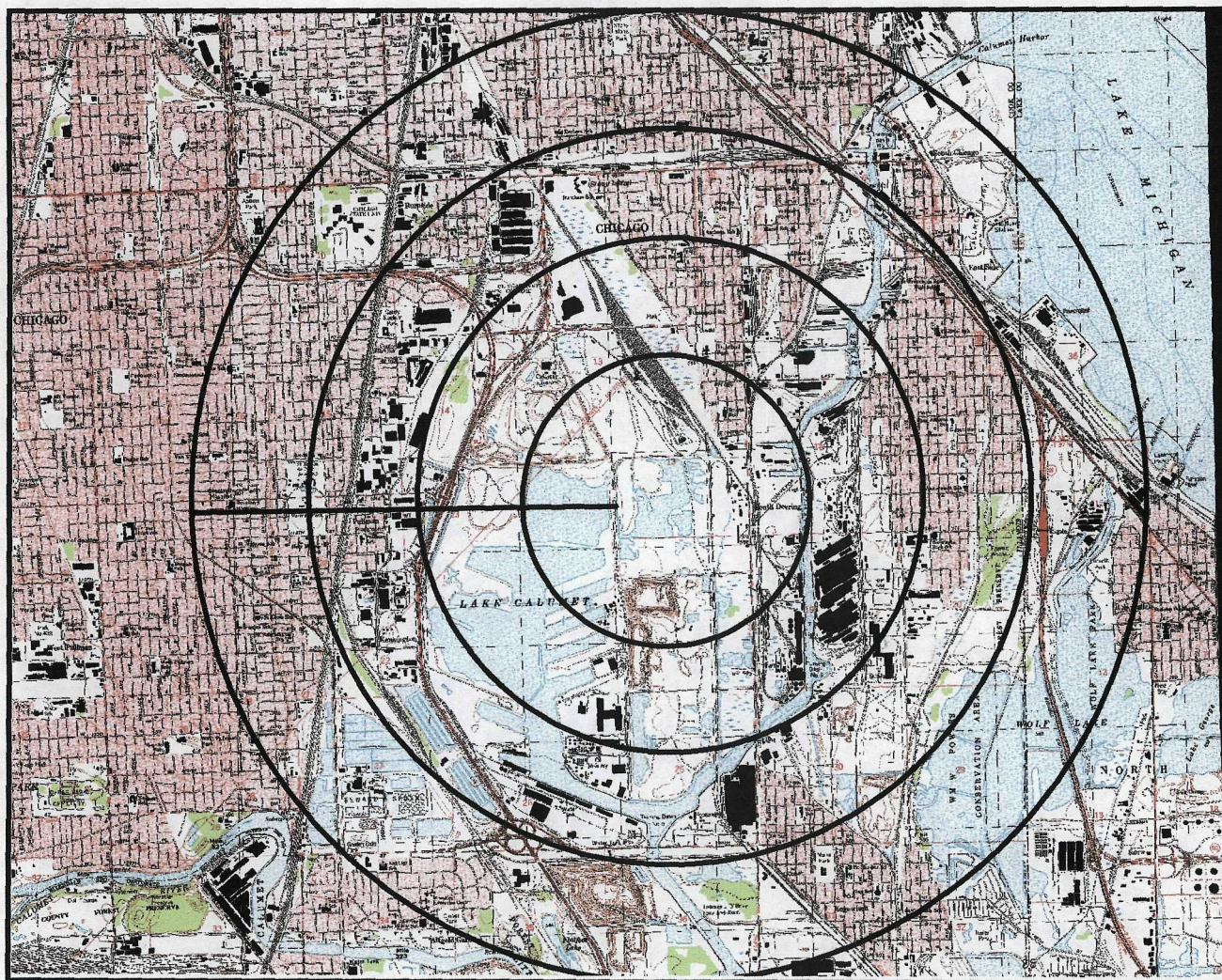
Table 6. Groundwater sample descriptions

Sample number	Sample location	Sample description
LC01	Located south of the site along the north side of Paxton 1.	Collected by Ecology and Environment.
G102/G103	Located in the southwest corner of the site.	Depth to water 5.0 feet, depth to bottom was 12.5 feet. The water appeared clear, no odor.
G104	Located in the south-central part of the site.	Depth to water 7.7 feet, depth to bottom was 15.0 feet. The water had a green tint and fizz, no odor.

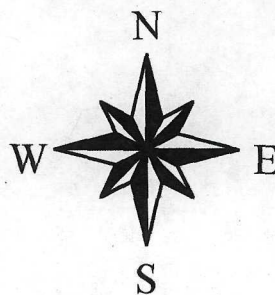
APPENDIX A

4 MILE RADIUS MAP

Appendix A. 4 mile radius map.

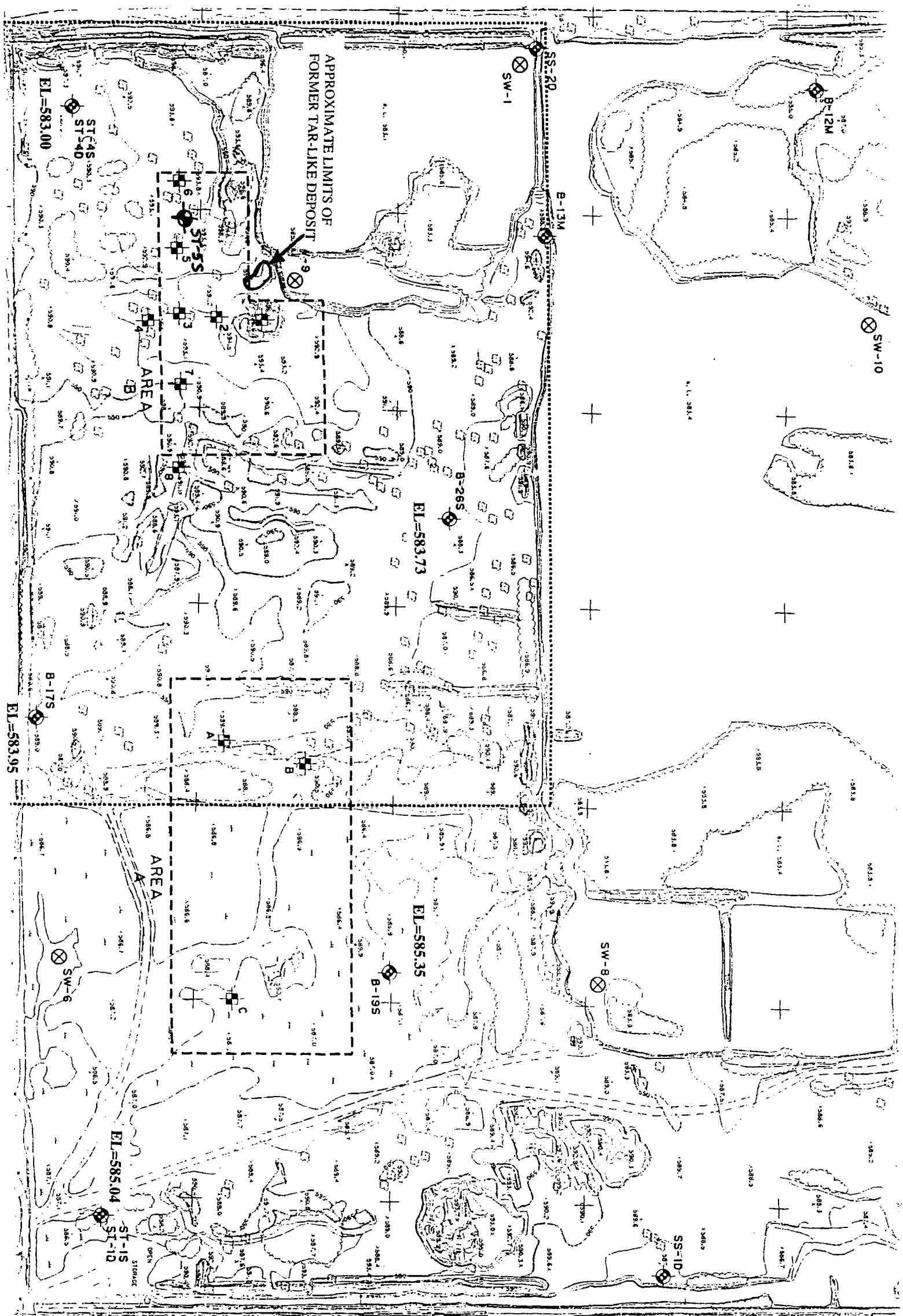


map source: IDNR regional topographic quadrangle maps 55A and 55B.

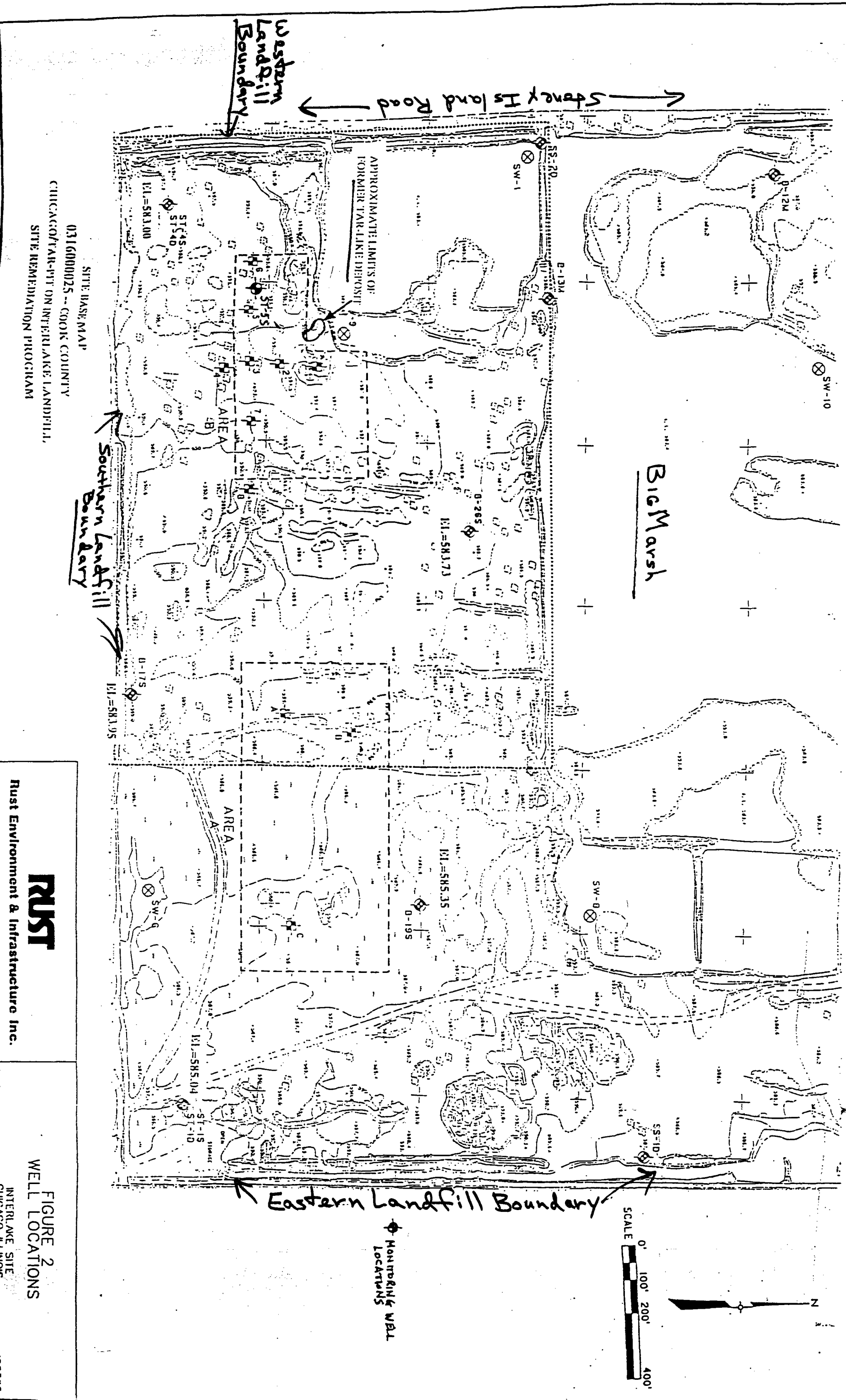


APPENDIX B

SITE PLAN MAP (SEE APPENDIX H)



RUST
 Rust Environment & Infrastructure Inc.
 JULY 1998
FIGURE 2
 WELL LOCATIONS
 INTERLAKE SITE
 CHICAGO, ILLINOIS
 102305



SITE BASE MAP
0316000025 -- COOK COUNTY
CHICAGO/TAIL-PILE ON INTERLAKE LANDFILL,
SITE REMEDIATION PROGRAM

RUST
Rust Environment & Infrastructure Inc.

JULY 1998

102305

APPENDIX C
TARGET COMPOUND LIST

TARGET COMPOUND LIST

Volatile Target Compounds

Chloromethane	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropene
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
2-Butanone	Toluene
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethylbenzene
Vinyl Acetate	Styrene
Bromodichloromethane	Xylenes (total)

Base/Neutral Target Compounds

Hexachloroethane	2,4-Dinitrotoluene
bis(2-Chloroethyl) Ether	Diethylphthalate
Benzyl Alcohol	N-Nitrosodiphenylamine
bis (2-Chloroisopropyl) Ether	Hexachlorobenzene
N-Nitroso-Di-n-Propylamine	Phenanthrene
Nitrobenzene	4-Bromophenyl-phenylether
Hexachlorobutadiene	Anthracene

2-Methylnaphthalene	Di-n-Butylphthalate
1,2,4-Trichlorobenzene	Fluoranthene
Isophorone	Pyrene
Naphthalene	Butylbenzylphthalate
4-Chloroaniline	bis(2-Ethylhexyl)Phthalate
bis(2-chloroethoxy)Methane	Chrysene
Hexachlorocyclopentadiene	Benzo(a)Anthracene
2-Chloronaphthalene	3-3'-Dichlorobenzidene
2-Nitroaniline	Di-n-Octyl Phthalate
Acenaphthylene	Benzo(b)Fluoranthene
3-Nitroaniline	Benzo(k)Fluoranthene
Acenaphthene	Benzo(a)Pyrene
Dibenzofuran	Ideno(1,2,3-cd)Pyrene
Dimethyl Phthalate	Dibenz(a,h)Anthracene
2,6-Dinitrotoluene	Benzo(g,h,i)Perylene
Fluorene	1,2-Dichlorobenzene
4-Nitroaniline	1,3-Dichlorobenzene
4-Chlorophenyl-phenylether	1,4-Dichlorobenzene

Acid Target Compounds

Benzoic Acid	2,4,6-Trichlorophenol
Phenol	2,4,5-Trichlorophenol
2-Chlorophenol	4-Chloro-3-methylphenol
2-Nitrophenol	2,4-Dinitrophenol
2-Methylphenol	2-Methyl-4,6-dinitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4-Methylphenol	4-Nitrophenol
2,4-Dichlorophenol	

Pesticide/PCB Target Compounds

alpha-BHC	Endrin Ketone
beta-BHC	Endosulfan Sulfate
delta-BHC	Methoxychlor
gamma-BHC (Lindane)	alpha-Chlordane
Heptachlor	gamma-Chlordane
Aldrin	Toxaphene
Heptachlor epoxide	Aroclor-1016
Endosulfan I	Aroclor-1221
4,4'-DDE	Aroclor-1232
Dieldrin	Aroclor-1242
Endrin	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan II	Aroclor-1260
4,4'-DDT	

Inorganic Target Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium
Chromium	Thallium
Cobalt	Vanadium
Copper	Zinc
Iron	Cyanide
Lead	Sulfide
Magnesium	

DATA QUALIFIERS

QUALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
U	Compound was tested for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL is also multiplied by two, to account for the fact that only half of the extract is recovered.	Analyte was analyzed for but not detected.
J	Estimated value. Used when estimating a concentration for tentatively identified compounds (TICS) where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero. Used in data validation when the quality control data indicate that a value may not be accurate.	Estimated value. Used in data validation when the quality control data indicate that a value may not be accurate.
C	This flag applies to pesticide results where the identification is confirmed by GC/MS.	Method qualifier indicates analysis by the Manual Spectrophotometric method.
B	Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	The reported value is less than the CRDL but greater than the instrument detection limit (IDL).
D	Identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor as in the "E" flag, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values are flagged with the "D" flag.	Not used.
E	Identifies compounds whose concentrations exceed the calibration range for that specific analysis. All extracts containing compounds exceeding the calibration range must be diluted and analyzed again. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses must be reported on separate Forms I. The Form I for the diluted sample must have the "DL" suffix appended to the sample number.	The reported value is estimated because of the presence of interference.
A	This flag indicates that a TIC is a suspected aldol concentration product formed by the reaction of the solvents used to process the sample in the laboratory.	Method qualifier indicates analysis by Flame Atomic Absorption (AA).
M	Not used.	Duplicate injection (a QC parameter not met).

N	Not used	Spiked sample (a QC parameter not met).
S	Not used.	The reported value was determined by the Method of Standard Additions (MSA).
W	Not used.	Post digestion spike for Furnace AA analysis (a QC parameter) is out of control limits of 85% to 115% recovery, while sample absorbance is less than 50% of spike absorbance.
•	Not used.	Duplicate analysis (a QC parameter not within control limits).
+	Not used.	Correlation coefficient for MSA (a QC parameter) is less than 0.995.
P	Not used.	Method qualifier indicates analysis by ICP (Inductively Coupled Plasma) Spectroscopy.
CV	Not used.	Method qualifier indicates analysis by Cold Vapor AA.
AV	Not used.	Method qualifier indicates analysis by Automated Cold Vapor AA.
AS	Not used.	Method qualifier indicates analysis by Semi-Automated Cold Spectrophotometry.
T	Not used.	Method qualifier indicates Titrimetric analysis.
NR	The analyte was not required to be analyzed.	The analyte was not required to be analyzed.
R	Rejected data. The QC parameters indicate that the data is not usable for any purpose.	Rejected data. The QC parameters indicate that the data is not usable for any purpose.

APPENDIX D
SITE AERIAL PHOTOGRAPHS

**Aerial Photograph showing the Interlake Property Site in 1964.
Current site boundary outlined in red.**



aerial photo source was IDOT 1964 aerial photograph.



**Aerial Photograph showing the Interlake Property Site in 1973.
Current site boundary outlined in red.**



aerial photo source was IDOT 1973 aerial photograph.



Aerial Photograph showing the Interlake Property Site in 1993.
Current site boundary outlined in red.



aerial photo source was IDOT 1993 aerial photograph.



APPENDIX E

IEPA SITE PHOTOGRAPHS

LOCATION: X101
DIRECTION: North
DATE: 4-29-99
TIME: 13:30
COMMENTS: Background soil sample



LOCATION: X102
DIRECTION: North
DATE: 4-29-99
TIME: 10:45
COMMENTS: Soil sample.
sample



LOCATION: X104
DIRECTION: West
DATE: 4-29-99
TIME: 12:00
COMMENTS: Soil sample.
sample



LOCATION: X105
DIRECTION: Southeast
DATE: 4-29-99
TIME: 11:30
COMMENTS: Soil sample.
Big marsh in
background.



LOCATION: X107
DIRECTION: North
DATE: 4-28-99
TIME: 16:00
COMMENTS: Soil sample.



LOCATION: X108
DIRECTION: North
DATE: 4-28-99
TIME: 16:30
COMMENTS: Soil sample.



LOCATION: X110
DIRECTION: South
DATE: 4-28-99
TIME: 13:30
COMMENTS: Soil sample.
Paxton 2 in
background.



LOCATION: X111
DIRECTION: East
DATE: 4-28-99
TIME: 11:00
COMMENTS: Soil sample.
Paxton 2 in
background.



LOCATION: X112
DIRECTION: East
DATE: 4-28-99
TIME: 10:00
COMMENTS: Soil sample.



LOCATION: X113
DIRECTION: East
DATE: 4-28-99
TIME: 8:30
COMMENTS: Soil sample.



LOCATION: X114
DIRECTION: Northwest
DATE: 4-28-99
TIME: 9:00
COMMENTS: Soil sample.



LOCATION: X115
DIRECTION: West
DATE: 4-28-99
TIME: 10:00
COMMENTS: Soil sample.
Backhole pit
behind sign.



LOCATION: X201
DIRECTION: West
DATE: 4-29-99
TIME: 13:00
COMMENTS: Background
sediment sample
from Indian Treaty
Creek.



LOCATION: X210
DIRECTION: East
DATE: 4-29-99
TIME: 14:00
COMMENTS: Sediment sample
from ditch north
Paxton 2.



LOCATION: G101
DIRECTION: South
DATE: 4-28-99
TIME: 16:30
COMMENTS: Groundwater
sample from well
north of Paxton 2.



LOCATION: G103/G104
DIRECTION: South
DATE: 4-28-99
TIME: 16:00
COMMENTS: Groundwater
sample from well
north of Paxton 2.



APPENDIX F
FOCUSED NFR

RUST Interoffice Correspondence

October 5, 1998

To: Mark Leibrock, Waste Management

Copy: Files

From: Chandler Taylor, REI Project Manager
Kurt Rubsam, REI

Subject: Waste Management of Illinois, Inc., Interlake Site

RECEIVED

OCT 13 1998

IEPA/BOL

INTRODUCTION

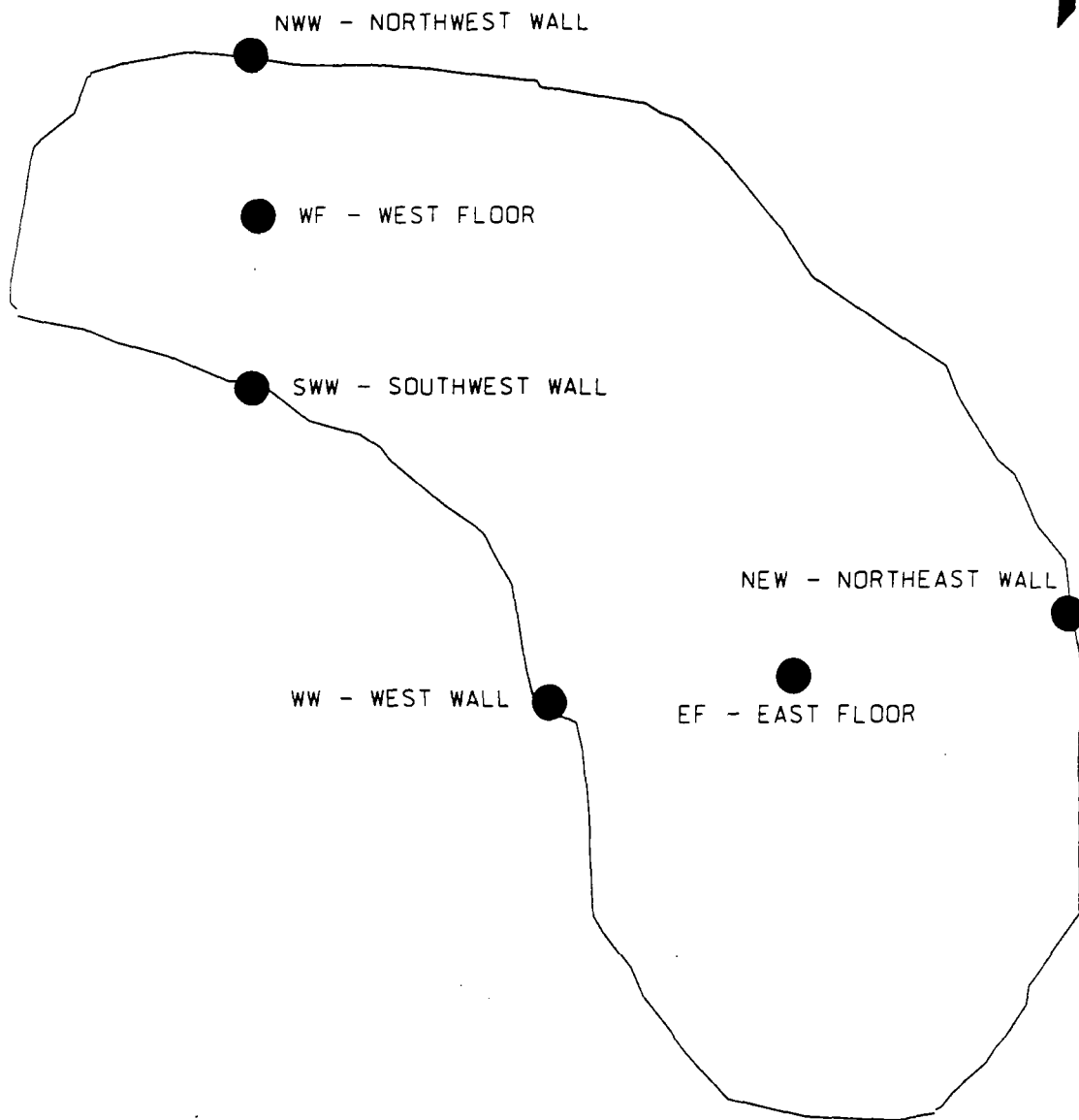
This memorandum summarizes the results of groundwater and soil sampling activities performed at the Interlake (Big Marsh) Site located in Chicago, Illinois under a Supplemental Work Plan (SWP) submitted to IEPA in September 1996 and responses to IEPA's comments on that SWP submitted in September 1997. IEPA approval of the SWP was received in a letter dated September 26, 1997. The soil samples were taken on October 16, 1997 upon completion of the excavation of a tar-like deposit at the Site. The two groundwater sampling events were completed by Rust Environment & Infrastructure (REI) in November 1997 and April 1998, on behalf of Waste Management of Illinois, Inc. (WM of IL).

SITE BACKGROUND

In the period from September 29, 1997 through October 16, 1997, the excavation of a tar-like deposit was conducted for WM of IL by Advanced Environmental Technical Services (AETS) at the Interlake site. Approximately 1,468 cubic yards of material was removed from the excavation and transported to the WM of IL CID Recycling and Disposal Facility for disposal under IEPA Waste Stream Authorization Number 970248 and WM of IL Number WMNA 194139. The approximate dimensions of the completed excavation were approximately 125 feet in length by 35 feet in width by 9 feet in depth. Following the excavation of the tar-like deposit, soil samples were collected from the excavation sidewalls and the floor to confirm that the complete deposit had been excavated, and any contamination associated with it had been removed.

In November 1997 and April 1998, groundwater sampling was conducted to evaluate the groundwater quality and the potential impact of the tar-like deposit on local groundwater quality. The following sections discuss the results of the soil confirmation samples and the groundwater monitoring samples.

ORIGINAL



TAR PIT EXCAVATION CONFIRMATION SOIL SAMPLES

Six soil samples were taken from the sidewalls and the floor of the excavation of the former tar-like deposit. Figure 1 shows the relative location of the samples within the excavation. The samples were analyzed for the complete 35 Illinois Administrative Code, Section 740, Appendix A, Target Compound List (TCL) of metals and cyanide (inorganics), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and pesticides and polychlorinated biphenyls (PCBs).

Table 1 summarizes the results of the compounds detected in the six confirmation soil samples. Analytical data is included in Attachment A. The analytical data from the confirmation soil sampling of the excavation was compared to the Illinois Tier 1 Soil Remediation Objectives (SROs) for Industrial/Commercial properties. Soil sample results exceeding the Tier 1 SROs are highlighted in Table 1.

Inorganics

Results exceeded Tier 1 SROs for arsenic, beryllium, or lead in all but one sample. The source of these inorganic contaminant concentrations is most likely the slag that comprises most of the ground surface of the site and surrounds the excavation, not the tar-like deposit.

VOCs

All VOCs were either below the Tier 1 SROs, or were not detected at a detection limit equal to their Tier 1 SRO.

SVOCs

The soil sample taken on the east floor of the excavation exceeded the Tier 1 SRO for benzo(a)pyrene. All other SVOCs were either below the Tier 1 SROs, or were not detected at a detection limit equal to their Tier 1 SRO.

Pesticides/PCBs

All Pesticides and PCBs were either below the Tier 1 SROs, or were not detected at a detection limit equal to their Tier 1 SRO.

These results (Inorganics, VOCs, SVOCs, and Pests/PCBs) suggest that the tar-like deposit has been fully excavated and no significant contamination resulting from this former deposit exists outside the excavation's extent.

GROUNDWATER SAMPLING EVENTS

Two rounds of groundwater sampling were performed, one on November 12 and 13, 1997 and one on April 27 and 28, 1998. As part of the first event, the water levels were measured in the site wells to establish a groundwater flow direction. A new monitoring well (ST-5S) was installed directly

Table 1

**Interlake - October 1997 Tar-Like Deposit Excavation Confirmation Soil Sample Detections
and Comparison to Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties
Industrial-Commercial Ingestion Exposure**

Analyte	Standard	Units	EF East Floor	WF West Floor	NEW Northeast Wall	WW West Wall	NWW Northwest Wall	SWW Southwest Wall
INORGANICS								
Aluminum	--	mg/kg	5,740	5,402	8,000	2,692	1,900	1,140
Arsenic	3	mg/kg	6.73	3.1	2.6	1.7	1.89	1.14
Barium	140,000	mg/kg	83.1	31	54.6	42.1	9.5	31.1
Beryllium	1	mg/kg	0.85	0.17	0.78	0.11	0.11	0.11
Cadmium	2,000	mg/kg	2.2	0.46	2.2	11.5	0.8	41.6
Calcium	--	mg/kg	90,100	51,000	201,250	132,000	57,300	57,300
Chromium	10,000	mg/kg	45	201	135	232	11.7	137
Cobalt	120,000	mg/kg	4.8	2.9	4.5	6.1	2.7	9.7
Copper	82,000	mg/kg	24.3	143	16.8	45.2	17.5	109
Iron	--	mg/kg	50,200	15,370	67,025	207,700	12,400	30,750
Lead	400	mg/kg	516	73.8	210	1100	53.8	3140
Magnesium	--	mg/kg	5,960	7,040	8,360	14,500	32,100	2,660
Manganese	96,000	mg/kg	2,360	5,080	10,735	22,840	286	8,960
Mercury	610	mg/kg	0.055	0.073	0.04	0.028	0.035	0.049
Nickel	41,000	mg/kg	17.8	13.3	11.8	14.5	5.9	46.6
Potassium	--	mg/kg	879	723	5570	415	417	674
Selenium	10,000	mg/kg	1.22	1.45	3.91	10.2	<0.75	8
Silver	10,000	mg/kg	0.46	0.26	0.51	1.2	0.4	2.8
Sodium	--	mg/kg	193	142	2010	562	99.9	1160
Thallium	160	mg/kg	1.61	3.97	5.12	9.38	<0.5	13
Vanadium	14,000	mg/kg	42.4	43.4	130	210	20.1	50
Zinc	610,000	mg/kg	2040	491	2334.2	11,300	630	23,100
Cyanide	41,000	mg/kg	0.933	<0.5	2.578	<0.5	1.231	<0.5
VOLATILE ORGANIC COMPOUNDS								
Acetone	200,000	mg/kg	<0.01	0.018	0.11	<0.01	<0.01	<0.01
Ethyl Benzene	200,000	mg/kg	0.02	0.01	<0.01	<0.01	<0.01	<0.01
Tetrachloroethene	110	mg/kg	0.031	0.039	<0.01	<0.01	<0.01	<0.01
Toluene	410,000	mg/kg	0.29	0.034	<0.01	<0.01	<0.01	<0.01
Trichloroethene	520	mg/kg	0.04	0.048	<0.01	<0.01	<0.01	<0.01
Xylenes (Total)	1,000,000	mg/kg	0.098	0.13	0.028	<0.01	<0.01	<0.01
SEMIVOLATILE ORGANIC COMPOUNDS								
Anthracene	610,000	mg/kg	3.4	<0.33	<0.33	<0.33	<0.33	<0.33
Benzo(a)Anthracene	8	mg/kg	4.6	0.7	<0.33	<0.33	<0.33	<0.33
Benzo(a)Pyrene	0.8	mg/kg	2.3	<0.34	<0.034	<0.34	<0.34	<0.34
Benzo(b)Fluoranthene	8	mg/kg	3.9	<0.33	<0.33	<0.33	<0.33	<0.33
Benzo(g,h,i)Perylene	--	mg/kg	3.3	0.65	<0.35	<0.35	<0.35	<0.35
Benzo(k)Fluoranthene	78	mg/kg	1.6	<0.33	<0.33	<0.33	<0.33	<0.33
Chrysene	780	mg/kg	5.4	0.77	<0.33	<0.33	<0.33	<0.33
Dibenzofuran	--	mg/kg	3	0.34	<0.33	<0.33	<0.33	<0.35
Fluoranthene	82,000	mg/kg	39.7	3.5	<0.33	<0.33	0.78	2
Fluorene	82,000	mg/kg	4.2	0.48	<0.33	<0.33	<0.33	<0.33
2-Methylnaphthalene	--	mg/kg	3	<0.35	<0.33	<0.33	<0.33	<0.33
Naphthalene	82,000	mg/kg	6.9	<0.33	<0.33	<0.33	<0.33	<0.33
Phenanthrene	--	mg/kg	21.3	1.6	<0.33	<0.33	<0.33	1.2
Pyrene	61,000	mg/kg	23.7	2.7	<0.33	<0.33	0.66	1.2
PESTICIDES/PCBs								
Endosulfan II	12,000	mg/kg	0.05	<0.08	<0.05	<0.05	<0.05	<0.05
p,p'-DDT	17	mg/kg	0.048	<0.12	<0.04	<0.04	<0.04	<0.04



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276

Mary A. Gade, Director

(217) 782-6761

February 19, 1999

Certified

P 344 302 649

Mark J. Leibrock, P.E.
Project Manager - Closed Sites
Waste Management of Illinois, Inc.
3003 Butterfield Road
Oak Brook, Illinois 60523

Re: 0316000025/Cook County
Chicago/Interlake Landfill
Site Remediation/Technical Reports

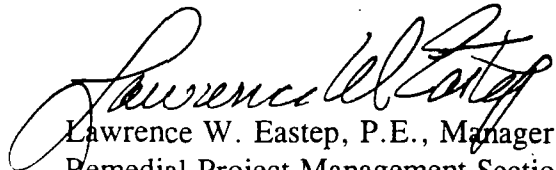
Dear Mr. Leibrock:

The Illinois Environmental Protection Agency (Illinois EPA) has completed the requested review of the Site Remediation and Closure Report dated October 9, 1998 (Log# 98-1443) and additional information received February 5, 1999 (Log# 99-199) from Waste Management of Illinois, Inc. (WMII).

The Illinois EPA has determined, based upon information submitted, the voluntary clean-up of the tar-like deposit (Site) on the Interlake property (Property), in accordance with the Remedial Action Plan dated September 12, 1997, has been successfully demonstrated. The requested release is for the remediation of the Site and chemicals sampled for during confirmatory sampling, namely: semi-volatiles, metals, pesticides, polychlorinated biphenyls, and volatile organics. However, metals are not included in the list of contaminants for which the requested release will apply, since the Site was backfilled with slag and fill material from the surrounding Property. The Site measures approximately: 125 feet long and 35 feet wide and 9 feet deep and is located in the southwest area of the property located at Stoney Island and 116th Street as depicted on the attached map. This letter offers no release from liability concerning groundwater at either the Site or the surrounding Property, since this letter pertains only to the removal of the tar-like material. Therefore, pursuant to Section 4(y) of the Environmental Protection Act, the Illinois EPA releases Waste Management, Inc. from further responsibility for preventive or corrective action for the Site.

If you have any questions, please feel free to contact **Marc Cummings** at (217) 782-9079.

Sincerely,



Lawrence W. Eastep, P.E., Manager
Remedial Project Management Section
Division of Remediation Management
Bureau of Land

LWE:mc

Attachment

APPENDIX G
WASTE MANAGEMENT SITE MAP

APPENDIX H

WASTE MANAGEMENT GROUNDWATER MAPS

SDMS US EPA Region V

Imagery Insert Form

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APPENDIX I
MEMORANDUM



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276

THOMAS V. SKINNER, DIRECTOR

Date: September 21, 1999

To: Illinois EPA Bureau of Land file

From: Timothy J. Murphy
Timothy J. Murphy
Environmental Protection Specialist
Illinois EPA

Subject: 0310965069 -- Cook County
Chicago/Interlake Property
SF/Technical Reports
Interlake Property Site Inspection July 18-20, 1989

This memo is presented to document that just over ten year ago, I still can still recall witnessing two couples (4 people total) fishing in the waters on the west side of the Interlake Property. The people were catching small bullhead catfish.

APPENDIX J
1999 ESI ANALYTICAL RESULTS
(See Volume 2)

SITE NAME: Interlake Property
ILD NUMBER: 000810432

TABLE 7
SUMMARY of 1999 ESI SOIL SAMPLE RESULTS

SAMPLING POINT PARAMETER	SCDM *	RAL *	X 101 background soil	X 102	X 103	X 104	X 105	X 107	X108	X109	X110	X111	X112	X113	X114	X115
VOLATILES (ppb)																
Methylene Chloride	78000	--	18 B	--	--	--	--	--	--	--	4 J	--	4 J	--	--	--
Acetone	58000000	--	190	--	56	--	--	30	--	56	180	140	62	38	57	44
Carbon Disulfide	58000000	--	18 U	--	--	--	--	--	--	--	--	--	4 J	6	--	--
2-Butanone (MEK)	--	--	24 J	--	--	--	--	--	--	--	27 J	--	--	--	--	--
Benzene	20000	5900000	4 J	--	4	--	--	--	--	--	--	--	--	--	--	--
Toluene	120000000	160000000	5 J	--	--	--	--	--	--	--	--	8 J	--	--	--	--
Xylene(total)	--	--	18 U	--	--	--	--	--	--	--	--	--	--	--	--	--

SEMI-VOLATILES (ppb)

N-Nitroso-di-n-Dipropylamine	--	3300	450 U	--	--	--	--	--	--	--	--	--	--	--	--	R
Naphthalene	2300000	--	130 J	110 J	150 J	290 J	120 J	--	190 J	1400	130 J	110 J	290 J	150 J	--	R
2-Methylnaphthalene	--	--	62 J	69 J	89 J	200 J	67 J	--	110 J	2000	80 J	81 J	180 J	99 J	100	R
Acenaphthylene	--	--	84 J	--	55 J	100 J	--	--	--	66 J	--	--	--	--	--	R
Acenaphthene	35000000	500000	450 UJ	190 J	230 J	270 J	120 J	--	--	--	100 J	--	--	--	--	R
Dibenzofuran	--	--	45 J	110 J	120 J	250 J	120 J	--	37 J	97 J	79 J	--	70 J	--	40 J	R
Fluorene	35000000	500000	450 UJ	180 J	240 J	400 J	170 J	--	--	--	130 J	--	--	--	--	R
Phenanthrene	--	500000	420 J	2400 J	2600 J	4400	1800	68 J	200 J	920 J	1100 J	290 J	300 J	290 J	130 J	R
Anthracene	170000000	500000	120 J	630 J	720 J	800 J	390 J	--	--	99 J	240 J	70 J	47 J	--	--	R
Carbazole	--	--	49 J	210 J	220 J	370 J	180 J	--	--	61	63 J	--	--	--	--	R
Di-n-Butylphthalate	58000000	78000000	44 J	--	--	--	--	53 J	--	--	150 J	87 J	--	--	--	R
Fluoranthene	--	500000	630 J	4700 J	4100 J	4700	1600	86 J	220 J	370 J	1800 J	370 J	330 J	230 J	96 J	R
Pyrene	17000000	500000	730 J	6200 J	5600 J	5800	2700 J	150 J	390 J	100 J	2600 J	480 J	480 J	300 J	130 J	R
Butylbenzylphthalate	120000000	160000000	450 UJ	--	--	--	--	40 J	80 J	91 J	--	--	--	--	--	R
Benzo(a)anthracene	--	500000	390 J	2400 J	2000 J	2400	960 J	64 J	150 J	390 J	990 J	250 J	210 J	150 J	66 J	R
Chrysene	--	500000	500 J	2700 J	2200	2700	1000 J	86 J	230 J	660 J	1100 J	320 J	320 J	260 J	120 J	R
bis(2-Ethylhexyl)phthalate	42000	--	140 J	94 J	120 J	170 J	78 J	54 J	110 J	470 J	--	330 J	83 J	--	--	R
Benzo(b)fluoranthene	--	--	530 J	2400 J	1900 J	1800 J	790 J	67 J	200 J	310 J	900 J	300 J	260 J	190 J	92 J	R
Benzo(k)fluoranthene	--	500000	500 J	2300 J	2100 J	2500	1000 J	110 J	260 J	640 J	950 J	300 J	320 J	220 J	50 J	R
Benzo(a)pyrene	51	500000	460 J	2400 J	2000 J	2200	900 J	73 J	180 J	400 J	980 J	300 J	280 J	160 J	82 J	R
Indeno(1,2,3-cd)pyrene	--	500000	250 J	1200 J	1000 J	1300 J	520 J	--	--	--	450 J	200 J	200 J	120 J	46 J	R
Dibenz(a,h)anthracene	--	500000	110 J	510 J	560 J	750	310 J	--	80 J	250 J	200 J	--	95 J	43 J	--	R
Benzo(g,h,i)perylene	--	500000	380 J	1200 J	1200 J	1800 J	560 J	60 J	180 J	540 J	590 J	250 J	270 J	150 J	78 J	R

PESTICIDES (ppb)

Heptachlor Epoxide	7600	23000	5 U	--	--	--	--	--	--	--	--	--	--	--	--	3 J
Dieldrin	29000	11000	9 U	--	--	--	--	--	--	35 J	--	10 J	--	--	--	12 J
Endrin	170000	230000	9 U	--	2 J	--	--	--	--	--	--	5 J	2 J	--	--	8 J
4,4'-DDE	1700	500000	24 J	--	21 J	89 J	35 J	--	--	21 J	15 J	49 J	6 J	17 J	--	13 J
4,4'-DDD	2400	710000	9 U	4 J	4 J	--	--	--	--	--	8	60 J	--	--	--	--
Endosulfan sulfate	--	--	9 U	--	10 J	--	--	--	--	29 J	--	9 J	3 J	4 J	--	--
Methoxychor	2900000	--	46 U	--	--	--	--	--	--	180	--	--	--	--	--	--
Endrin Ketone	--	--	9 U	--	12 J	--	--	--	--	--	--	--	2 J	4 J	--	--
4,4'-DDT	1700	390000	84	7 J	26 J	140	36 J	--	4 J	76 J	27 J	36 J	--	10 J	--	--
Endrin aldehyde	--	--	9 U	--	--	--	--	--	--	14	--	5 J	2 J	--	--	40 J
gamma-Chlordane	--	--	5 U	--	--	--	--	--	--	--	--	3 J	--	--	--	--

INORGANICS (ppm)

Arsenic	320	8-200	5.2	8.2	6.6	28.0	15.7	3.4	--	2.3	9.2	4.8	--	7.6	2.8	--
Barium	41000	--	90.5	77.9	85.5	356.0	--	108.0	94.3	121.0	69.3	115.0	138.0	78.9	--	82.9
Beryllium	0.14	40	0.1 B	--	--	1.9	--	--	1.1	1.2	--	--	--	--	--	--
Cadmium	290	25	1.2 B	--	--	3.2	--	22.5	2.3	2.4	29.8	2.0	--	13.1	--	2.7
Chromium	2900	200-400	34.7	21.2	19.3	20.5	8.9	126.0	2480.0	1820.0	29.8	53.6	227.0	137.0	13.5	296.0
Copper	22000	5000	33.6	57.0	62.6	191.0	24.9	116.0	66.8	84.1	41.9	53.5	17.2	143.0	12.2	50.6
Iron	--	--	16200.0	21000.0	17800.0	21200.0	19800.0	146000.0	132000.0	93600.0	16500.0	17100.0	103000.0	250000.0	8750.0	270000.0
Lead	--	500-1000	145.0	145.0	164.0	766.0	122.0	1180.0	1330.0	1840.0	92.6	228.0	89.9	1060.0	39.8	131.0
Manganese	58000	--	1000.0	378.0	385.0	433.0	458.0	11500.0	44900.0	35200.0	863.0	346.0	34500.0	10300.0	569.0	21600.0
Nickel	58000	1600	15.7	28.8	28.5	22.7	14.0	51.6	31.3	37.6	27.0	18.8	--	57.0	--	22.6
Selenium	1700	2300	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	1700	2300	0.3 U	--	--	--	--	3.5	--	--	--	--	--	--	--	--
Thallium	41	55	1.3 U	--	--	--	--	4.6	--	--	--	--	--	4.8	--	--
Vanadium	--	--	18.2	36.6	20.1	41.4	16.6	80.6	359.0	340.0	21.9	21.8	233.0	118.0	12.8	225.0
Zinc	120000	160000	242.0	188.0	292.0	615.0	142.0	12200.0	503.0	307.0	197.0	346.0	141.0	6740.0	263.0	1400.0
Cyanide	12000	12-350	0.3 B	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	--	--	7.5	7.4	7.4	7.5	7.5	7.8	7.8	8.1	7.7	6.8	7.6	7.5	7.6	9.1

* (SCDM) Superfund Chemical Data Matrix are human health based objectives
* (RAL) USEPA Removal Action Limits
-ppb (parts per billion)
-ppm (parts per million)
-Numbers in bold reflect concentrations that are greater than three times the background sample.

SITE NAME: Interlake Property
ILD NUMBER: 000810432

TABLE 8
SUMMARY OF 1999 ESI SEDIMENT SAMPLE RESULTS

SAMPLING POINT PARAMETER	SCDM *	RAL*	X201 background sediment	X202	X203	X204	X205	X206	X207	X208	X209	X210	X211	X212	X213	X214	X215
VOLATILES (ppb)																	
Methylene Chloride	78000	--	10 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	58000000	--	330.0	990.0	620.0	550.0	480.0	350.0	--	--	--	--	--	--	--	--	--
Carbon Disulfide	58000000	--	68	790.0	--	31.0	35.0	74.0	--	--	--	--	--	--	--	--	--
2-Butanone (MEK)	--	--	76.0	220.0	450.0	99.0 J	93.0	--	--	--	--	--	--	--	--	--	--
Benzene	20000	5900000	8.0 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	120000000	160000000	10 U	--	17.0 J	--	--	--	--	--	--	--	--	--	--	--	--
Xylene(total)	--	--	10 U	--	15.0 J	--	--	--	--	--	--	--	--	--	--	--	--
SEMI-VOLATILES (ppb)																	
N-Nitroso-di-n-Dipropylamine	--	3300	850.0 U	--	--	--	--	--	--	--	--	81.0 J	--	--	87.0 J	--	--
Naphthalene	2300000	--	850.0 U	130.0 J	--	100.0 J	--	--	72.0 J	110.0 J	42.0 J	97.0 J	130.0 J	--	--	100.0 J	110.0 J
2-Methylnaphthalene	--	--	850.0 U	110.0 J	3500.0 J	95.0 J	--	--	92.0 J	--	--	--	160.0 J	--	92.0 J	96.0 J	71.0 J
Acenaphthylene	--	--	850.0 U	--	--	--	--	--	48.0 J	--	--	--	--	--	--	--	--
Acenaphthene	35000000	500000	110.0 J	79.0 J	3600.0 J	--	--	--	48.0 J	93.0 J	100.0 J	91.0 J	93.0 J	100.0 J	--	59.0 J	61.0 J
Dibenzofuran	--	--	850.0 U	--	--	--	--	--	56.0 J	92.0 J	--	--	81.0 J	--	--	75.0 J	56.0 J
Fluorene	35000000	500000	180.0 J	86.0 J	5600.0 J	--	--	--	54.0 J	170.0 J	180.0 J	110.0 J	130.0 J	72.0 J	--	940.0 J	90.0 J
Phenanthrene	--	500000	990.0	770.0 J	2200.0 J	200.0 J	160.0 J	76.0 J	580.0 J	760.0 J	3000.0 J	500.0	1200.0 J	710.0 J	250.0 J	700.0 J	480.0 J
Anthracene	170000000	500000	270.0 J	2200.0 J	4000.0 J	--	--	--	170.0 J	250.0 J	800.0 J	290.0 J	240.0 J	180.0 J	64.0 J	170.0 J	110.0 J
Carbazole	--	--	850.0 U	--	--	--	--	--	49.0 J	--	92.0 J	110.0 J	87.0 J	52.0 J	--	46.0 J	--
Di-n-Butylphthalate	58000000	78000000	850.0 U	110.0 J	--	--	--	--	49.0 J	69.0 J	--	75.0 J	--	50.0 J	--	59.0 J	59.0 J
Fluoranthene	--	500000	1700.0	1300.0 J	3500.0 J	230.0 J	200.0 J	91.0 J	1100.0 J	1400.0 J	3400.0 J	730.0	1400.0 J	110.0 J	320.0 J	940.0 J	650.0 J
Pyrene	17000000	500000	2500.0	2000.0 J	2000.0 J	250.0 J	200.0 J	84.0 J	1400.0 J	1600.0 J	7400.0 J	7400.0 J	2400.0 J	130.0 J	470.0 J	160.0 J	930.0 J
Butylbenzylphthalate	120000000	160000000	850.0 UJ	--	--	--	--	--	--	--	--	47.0 J	--	--	--	--	76.0 J
Benzo(a)anthracene	--	500000	1000.0	920.0 J	4900.0 J	140.0 J	110.0 J	--	630.0 J	720.0 J	2200.0 J	2200.0 J	1000.0 J	780.0 J	210.0 J	610.0 J	320.0 J
Chrysene	--	500000	1100.0	1100.0 J	6700.0 J	200.0 J	150.0 J	72.0 J	680.0 J	820.0 J	2500.0 J	2500.0 J	1200.0 J	960.0 J	320.0 J	730.0 J	430.0 J
bis(2-Ethylhexyl)phthalate	42000	--	460.0 J	430.0 J	1400.0 J	96.0 J	--	--	50.0 J	440.0 J	44.0 J	4900.0 J	77.0 J	82.0 J	150.0 J	120.0 J	340.0 J
Benzo(b)fluoranthene	--	--	1100.0 J	960.0 J	2000.0 J	170.0 J	--	77.0 J	590.0 J	720.0 J	950.0 J	760.0 J	830.0 J	970.0 J	180.0 J	600.0 J	290.0 J
Benzo(k)fluoranthene	--	500000	1300.0 J	1000.0 J	1600.0 J	150.0 J	140.0 J	55.0 J	570.0 J	600.0 J	1900.0 J	900.0 J	1200.0 J	720.0 J	290.0 J	860.0 J	430.0 J
Benzo(a)pyrene	51	500000	1300.0 J	900.0 J	3700.0 J	210.0 J	140.0 J	61.0 J	610.0 J	720.0 J	1900.0 J	920.0 J	910.0 J	110.0 J	250.0 J	730.0 J	350.0 J
Indeno(1,2,3-cd)pyrene	--	500000	670.0 J	520.0 J	2000.0 J	130.0 J	--	--	300.0 J	380.0 J	830.0 J	450.0 J	420.0 J	980.0 J	150.0 J	520.0 J	200.0 J
Dibenz(a,h)anthracene	--	500000	320.0 J	240.0 J	1800.0 J	--	--	--	98.0 J	200.0 J	460.0 J	180.0 J	230.0 J	410.0 J	68.0 J	230.0 J	--
Benzo(g,h,i)perylene	--	500000	730.0 J	580.0 J	3660.0 J	140.0 J	89.0 J	48.0 J	330.0 J	390.0 J	330.0 J	410.0 J	430.0 J	120.0 J	210.0 J	600.0 J	220.0 J
PESTICIDES (ppb)																	
Heptachlor Epoxide	7600	23000	4.4 U	--	--	--	--	R	--	--	--	--	--	--	--	--	--
Dieldrin	29000	11000	7.3 J	--	9.5 J	--	--	R	--	--	--	--	--	--	--	1.2 J	--
Endrin	170000	230000	8.5 U	--	--	--	--	R	--	--	--	--	--	--	--	--	--
4,4'-DDE	1700	500000	63.0 J	80.0 J	83.0 J	27.0 J	--	R	--	18.0 J	--	--	110.0	--	--	3.9 J	2.7 J
4,4'-DDD	2400	710000	100.0	180.0	130.0	170.0	45.0	70.0 J	3.6 J	36.0	4.3 J	--	3.5 J	--	--	8.2 J	14.0 J
Endosulfan sulfate	--	--	8.3 J	--	10.0 J	--	--	R	--	--	3.0 J	--	--	--	--	--	3.1 J
Methoxychor	2900000	--	44.0 U	--	36.0 J	--	--	R	--	--	--	--	--	--	--	--	--
Endrin Ketone	--	--	8.5 U	--	--	--	--	R	2.4 J	--	3.9 J	4.7	--	2.7 J	--	3.4 J	1.4 J
4,4'-DDT	1700	390000	29.0 J	66.0 J	--	24.0	--	R	--	--	--	9.3 J	67.0 J	--	--	3.5 J	--
Endrin aldehyde	--	--	8.5 U	--	--	--	--	R	--	--	--	--	--	--	--	--	2.5 J
gamma-Chlordane	--	--	3.9 J	20.0 J	5.5 J	--	--	R	6.6	13.0 J	14.0	12.0 J	--	--	--	--	--
INORGANICS (ppm)																	
Arsenic	320	8-200	9.7	14.5	9.3	6.2	10.5	4.3	8.2	11.0	7.7	7.7	4.4	5.3	5.9	15.7	9.9
Barium	41000	--	391.0	192.0	249.0	--	--	119.0	69.5	--	126.0	60.3	--	103.0	--	185.0	--
Beryllium	0.14	40	2.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	290	25	1.4 B	4.3	--	--	--	--	--	--	8.0	--	--	--	--	--	--
Chromium	2900	200-400	24.2	52.5	50.2	17.5	19.6	15.1	8.6	32.1	41.2	20.4	15.6	96.2	11.8	83.9	18.7
Copper	22000	5000	96.2	136.0	124.0	30.2	41.3	29.0	56.3	50.2	46.5	39.5	23.2	54.7	21.8	85.3	38.0
Iron	--	--	19500.0	38800.0	35300.0	--	--	22100.0	17300.0	14900.0	24800.0	90400.0	16900.0	8600.0	26700.0	14300.0	33000.0
Lead	--	500-1000	306.0	260.0	296.0	42.1	64.3	44.7	124.0	124.0	648.0	61.3	45.3	77.4	29.3	235.0	57.9
Manganese	58000	--	1360.0	664.0	821.0	276.0	231.0	193.0	282.0	564.0	2420.0	580.0	431.0	3210.0	538.0	2770.0	--
Nickel	58000	1600	19.5	41.3	30.7	26.0	32.6	24.7	16.9	33.2	19.5	22.9	--	16.6	19.5	18.4	29.6
Selenium	1700	2300	2.6	3.3	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	1700	2300	0.8 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	41	55	1.2 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	15.5 B	37.1	--	--	--	19.7	--	--	41.1	15.3	--	42.6	--	36.2	18.0
Zinc	120000	160000	284.0	813.0	541.0	150.0	207.0	98.3	327.0	220.0	5060.0	92.3	72.4	119.0	117.0	184.0	126.0
Cyanide	12000	12-350	5.6	3.2	--	--	--	--	--	--	--	--	1.0	--	--	--	--
PH	--	--	7.3	7.3	7.3	6.0	6.4	7.2	7.9	7.3	7.3	8.0	7.5	7.4	7.0	7.5	7.3

* (SCDM) Superfund Chemical Data Matrix are human health based objectives
* (RAL) USEPA Removal Action Limits
-ppb (parts per billion)
-ppm (parts per million)
-Numbers in bold reflect concentrations that are greater than three times the background sample.

TABLE 9. Groundwater analysis

SITE NAME: Interlake Property
ILD NUMBER: 000810432

SAMPLING POINT PARAMETER	620 Illinois Standards Class 1 GW	* RAL SUPERFUND DRINKING WATER	LC01 background groundwater	G102	G103	G104
VOLATILES (ppb)						
1,1-Dichloroethane	5.0	3500.0	1400.0			
Carbon Disulfide			100.0 U		6.0 J	4.0 J
1,2 Dichloroethane	5.0	40.0	750.0			
Methylene Chloride	5.0	500.0	22000.0			
Acetone		3500.0	5000.0			
2-Butanone (MEK)		21000.0	3600.0			
Benzene	5.0	100.0	73.0 J		2.0 J	2.0 J
Chloroethane			190.0			
Ethylbenzene		1000.0	240.0			
Tetrachloroethene	5.0		130.0			
Toluene	1000.0	2000.0	3700.0			
Trichloroethene	5.0		270.0			
Vinyl Chloride	2.0	2.0	84.0 J			
Xylene(total)	10000.0	40000.0	960.0			
SEMI-VOLATILES (ppb)						
2-Methylphenol			370.0 J			
4-Methylphenol			3000.0			
Diethylphthalate			230.0 J			
Isophorone		4000.0	120.0 J			
Phenol	100.0	6000.0	3300.0			
bis(2-Ethylhexyl)phthalate			1000.0 U		4.0 J	1.0 J
PESTICIDES (ppb)						
beta-BHC			0.3 J			
delta-BHC			0.2 J			
INORGANICS (ppb)						
Arsenic	50.0	50.0				
Barium	200.0	5000.0	375.0	929.0		
Beryllium	4.0		0.3 U			
Cadmium	5.0	5.0	8.0 J			
Chromium	100.0		341.0			
Cobalt	1000.0		76.9			
Copper	650.0		191.0 J			
Iron	5000.0		1420000.0	8190.0	3710.0	3710.0
Lead	7.5		261.0	8.9		
Manganese	150.0		429000.0	443.0	958.0	958.0
Nickel	100.0		0.4 J			
Selenium	50.0		14.4			
Silver	50.0		17.6			
Thallium	2.0		16.3			
Vanadium			74.3			
Zinc	5000.0		47900.0	27.7		
Cyanide	200.0		14.0	36.9	13.3	13.3
Ammonia			540000.0	83.0	24.0	26.0
Sulfate	400.0		not analyzed		729.0	717.0
PH	6.5-9.0		6.0			

* (RAL) USEPA Removal Action Limits
-ppb (parts per billion)

SITE NAME: Interlake Property
ILD NUMBER: 000810432

TABLE 10
SUMMARY OF 1999 ESI SOIL SAMPLE RESULTS
COMPARED TO TACO TIER 1 OBJECTIVES

SAMPLING POINT PARAMETER	TIER 1 INDUSTRIAL/ COMMERCIAL	TIER 1 CLASS 1 GROUNDWATER	X 101 background soil	X 102	X 103	X 104	X 105	X 107	X108	X109	X110	X111	X112	X113	X114	X115
VOLATILES (ppb)																
Methylene Chloride	24000	20	18 B	--	--	--	--	--	--	--	4 J		4 J			
Acetone	100000000	16000	190	--	56	--	--	30	--	56	180	140	62	38	57	44
Carbon Disulfide	720000	32000	18 U	--	--	--	--	--	--	--			4 J	6		
2-Butanone (MEK)		--	24 J	--	--	--	--	--	--	--	27 J					
Benzene	1500	30	4 J	--	4	--	--	--	--	--						
Toluene	650000	12000	5 J	--	--	--	--	--	--	--		8 J				
Xylene(total)	410000	150000	18 U	--	--	--	--	--	--	--						
SEMI-VOLATILES (ppb)																
N-Nitroso-di-n-Dipropylamine	1200000	1000	450 U	--	--	--	--	--	--	--						R
Naphthalene	82000000	84000	130 J	110 J	150 J	290 J	120 J	--	190 J	1400	130 J	110 J	290 J	150 J		R
2-Methylnaphthalene		--	62 J	69 J	89 J	200 J	67 J	--	110 J	2000	80 J	81 J	180 J	99 J	100	R
Acenaphthylene		--	84 J	--	55 J	100 J	--	--	--	66 J						R
Acenaphthene	120000000	570000	450 UJ	190 J	230 J	270 J	120 J	--	--	100 J						R
Dibenzofuran		--	45 J	110 J	120 J	250 J	120 J	--	37 J	97 J			70 J		40 J	R
Fluorene	82000000	560000	450 UJ	180 J	240 J	400 J	170 J	--	--	130 J						R
Phenanthrene		--	420 J	2400 J	2600 J	4400	1800	68 J	200 J	920 J	1100 J	290 J	300 J	290 J	130 J	R
Anthracene	610000000	12000000	120 J	630 J	720 J	800 J	390 J	--	--	99 J	240 J	70 J	47 J			R
Carbazole	290000	600	49 J	210 J	220 J	370 J	180 J			61	63 J					R
Di-n-Butylphthalate	2300000	2300000	44 J	--	--	--	--	53 J	--	--	150 J	87 J				R
Fluoranthene	82000000	4300000	630 J	4700 J	4100 J	4700	1600	86 J	220 J	370 J	1800 J	370 J	330 J	230 J	96 J	R
Pyrene	61000000	4200000	730 J	6200 J	5600 J	5800	2700 J	150 J	390 J	100 J	2600 J	480 J	480 J	300 J	130 J	R
Butylbenzylphthalate	930000	930000	450 UJ	--	--	--	--	40 J	80 J	91 J						R
Benzo(a)anthracene	8000	2000	390 J	2400 J	2000 J	2400	960 J	64 J	150 J	390 J	990 J	250 J	210 J	150 J	66 J	R
Chrysene	780000	160000	500 J	2700 J	2200	2700	1000 J	86 J	230 J	660 J	1100 J	320 J	320 J	260 J	120 J	R
bis(2-Ethylhexyl)phthalate	410000	3600000	140 J	94 J	120 J	170 J	78 J	54 J	110 J	470 J		330 J	83 J			R
Benzo(b)fluoranthene	8000	5000	530 J	2400 J	1900 J	1800 J	790 J	67 J	200 J	310 J	900 J	300 J	260 J	190 J	92 J	R
Benzo(k)fluoranthene	78000	49000	500 J	2300 J	2100 J	2500	1000 J	110 J	260 J	640 J	950 J	300 J	320 J	220 J	50 J	R
Benzo(a)pyrene	800	8000	460 J	2400 J	2000 J	2200	900 J	73 J	180 J	400 J	980 J	300 J	280 J	160 J	82 J	R
Indeno(1,2,3-cd)pyrene	8000	14000	250 J	1200 J	1000 J	1300 J	520 J	--	--	450 J	200 J	200 J	200 J	120 J	46 J	R
Dibenz(a,h)anthracene	800	2000	110 J	510 J	560 J	750	310 J	--	80 J	250 J	200 J	--	95 J	43 J		R
Benzo(g,h,i)perylene	--	--	380 J	1200 J	1200 J	1800 J	560 J	60 J	180 J	540 J	590 J	250 J	270 J	150 J	78 J	R
PESTICIDES (ppb)																
Heptachlor Epoxide	600	700	4.7 U													2.8 J
Dieldrin	400	4	9.0 U	--	--	--		--	--	35.0 J		9.8 J			R	12.0 J
Endrin	610000	1000	9.0 U		2.4 J							4.7 J	1.6 J		R	8.1 J
4,4'-DDE	17000	16000	24.0 J	--	21.0 J	89.0 J	35.0 J	--	--	21.0 J	15.0 J	49.0 J	5.8 J	17.0 J	R	13.0 J
4,4'-DDD	24000	32000	9.0 U	3.5 J	3.5 J	--	--	--	--	--	8.0	60.0 J			R	
Endosulfan sulfate		--	9.0 U	--	10.0 J	--	--	--	--	29.0 J		8.5 J	2.8 J	4.2 J	R	
Methoxychor	10000000	160000	46.0 U							180.0					R	
Endrin Ketone		--	9.0 U		12.0 J								2.4 J	3.8 J	R	
4,4'-DDT	17000	32000	84.0	6.7 J	26.0 J	140.0	36.0 J	--	4.4 J	76.0 J	27.0 J	36.0 J		10.0 J	R	
Endrin aldehyde	--	--	9.0 U							14.0		4.8 J	1.5 J		R	40.0 J
gamma-Chlordane	--	--	4.7 U	--	--	--	--	--	--	--		3.0 J			R	
INORGANICS (ppm)																
Arsenic	3	50	5.2	8.2	6.6	28.0	15.7	3.4	--	2.3	9.2	4.8		7.6	2.8	
Barium	140000	2000	90.5	77.9	85.5	356.0	--	108.0	94.3	121.0	69.3	115.0	138.0	78.9		82.9
Beryllium	1.00	4	0.6 B	--	--	1.9	--	--	1.1	1.2						
Cadmium	2000	5	1.2 B	--	--	3.2	--	22.5	2.3	2.4	29.8	2.0		13.1		2.7
Chromium	420	100	34.7	21.2	19.3	20.5	8.9	126.0	2480.0	1820.0	29.8	53.6	227.0	137.0	13.5	296.0
Copper	82000	650	33.6	57.0	62.6	191.0	24.9	116.0	66.8	84.1	41.9	53.5	17.2	143.0	12.2	50.6
Iron		5000	16200.0	21000.0	17800.0	21200.0	19800.0	146000.0	132000.0	93600.0	18500.0	17100.0	103000.0	250000.0	8750.0	270000.0
Lead	400	8	145.0	145.0	164.0	766.0	122.0	1180.0	1330.0	1840.0	92.6	228.0	89.9	1060.0	39.8	131.0
Manganese	91000000	150	1000.0	378.0	385.0	433.0	458.0	11500.0	44900.0	35200.0	863.0	346.0	34500.0	10300.0	569.0	21600.0
Nickel	21000000	100	15.7	28.8	28.5	22.7	14.0	51.6	31.3	37.6	27.0	18.8		57.0		22.6
Selenium	1000000	50	0.8	--	--	--	--	--	--	--						
Silver	10000000	50	0.3 U	--	--	--	--	3.5	--	--						
Thallium	160000	2	1.3 U	--	--	--	--	4.6	--	--				4.8		
Vanadium	14000000	49	18.2	36.6	20.1	41.4	16.6	80.6	359.0	361.0	21.9	21.8	233.0	118.0	12.8	225.0
Zinc	610000000	5000	242.0	188.0	292.0	615.0	142.0	12200.0	503.0	307.0	197.0	346.0	141.0	6740.0	263.0	1400.0
Cyanide	41000000	200	0.2 B	--	--	--	--	--	--	--						
PH			7.5	7.4	7.4	7.5	7.5	7.8	7.8	8.1	7.7	6.8	7.6	7.5	7.6	9.1

* The most conservative Industrial-Commercial objective between Ingestion and Inhalation was chosen from the Tier 1 lookup tables.
- Numbers in bold exceed either the Industrial-Commercial objective or the soil component of the Groundwater Ingestion Exposure Route value.
-ppb (parts per billion)
-ppm (parts per million)

SITE NAME: Interlake Property
ILD NUMBER: 000810432

TABLE 11
SUMMARY OF 1999 ESI SAMPLE RESULTS
COMPARED TO THE ECOTOX AND ONTARIO SEDIMENT GUIDELINES

SAMPLING POINT PARAMETER	USEPA ECOTOX THRESHOLD	ONTARIO SEDIMENT GUIDE "SEL"	X201	X202	X203	X204	X205	X206	X207	X208	X209	X210	X211	X212	X213	X214	X215
VOLATILES (ppb)																	
Methylene Chloride	--	--	10 U							--	--	--	--		--		
Acetone	--	--	330	990	620	550	480	350		--	--	--	--		--		
Carbon Disulfide	--	--	68	790		31	35	74		--	--	--	--		--		
2-Butanone (MEK)	--	--	76	220	450	99 J	93			--	--	--	--		--		
Benzene	57	--	8 J							--	--	--	--		--		
Toluene	670	--	10 U		17 J					--	--	--	--		--		
Xylene(total)	25	--	10 U		15 J					--	--	--	--		--		
SEMI-VOLATILES (ppb)																	
N-Nitroso-di-n-Dipropylamine			850 U							--	--	81 J	--		87 J		
Naphthalene	480	--	850 U	130 J		100 J			72 J	110 J	42 J	97 J	130 J		--	100 J	110 J
2-Methylnaphthalene		--	850 U	110 J	3500 J	95 J			92 J	--	--	--	160 J		92 J	96 J	71 J
Acenaphthylene		--	850 U						48 J	--	--	--	--		--		
Acenaphthene	620	--	110 J	79 J	3600 J				46 J	93 J	100 J	91 J	93 J	100 J	--	59 J	61 J
Dibenzofuran	2000	--	850 U						56 J	92 J	--	--	81 J		--	75 J	56 J
Fluorene	540	--	180 J	86 J	5600 J				54 J	170 J	180 J	110 J	130 J	72 J	--	940 J	90 J
Phenanthrene		--	990	770 J	2200 J	200 J	160 J	76 J	580 J	760 J	3000 J	500	1200 J	710 J	250 J	700 J	480 J
Anthracene		--	270 J	2200 J	4000 J				170 J	250 J	800 J	290 J	180 J	180 J	64 J	170 J	110 J
Carbazole		--	850 U						49 J		92 J	110 J	87 J	52 J		46 J	
Di-n-Butylphthalate	11000	--	850 U	110 J					49 J	69 J	--	75 J	50 J	--	--	59 J	59 J
Fluoranthene	2900	--	1700	1300 J	3500 J	230 J	200 J	91 J	1100 J	1400 J	3400 J	730	1400 J	110 J	320 J	940 J	650 J
Pyrene	660	--	2500	2000 J	2000 J	250 J	200 J	84 J	1400 J	1600 J	7400 J	7400 J	2400 J	130 J	470 J	160 J	930 J
Butylbenzylphthalate	11000	--	850 U						--	--	--	47 J			--		76 J
Benzo(a)anthracene		--	1000	920 J	4900 J	140 J	110 J		630 J	720 J	2200 J	2200 J	1000 J	780 J	210 J	610 J	320 J
Chrysene		--	1100	1100 J	6700 J	200 J	150 J		680 J	820 J	2500 J	2500 J	1200 J	960 J	320 J	730 J	430 J
bis(2-Ethylhexyl)phthalate		--	460 J	430 J	1400 J	96 J			50 J	440 J	44 J	4900 J	77 J	82 J	150 J	120 J	340 J
Benzo(b)fluoranthene		--	1100 J	960 J	2000 J	170 J		77 J	590 J	720 J	950 J	760 J	830 J	970 J	180 J	600 J	290 J
Benzo(k)fluoranthene		--	1300 J	1000 J	1600 J	150 J	140 J	55 J	570 J	600 J	1900 J	900 J	1200 J	720 J	290 J	860 J	430 J
Benzo(a)pyrene	430	--	1300 J	900 J	3700 J	210 J	140 J	61 J	610 J	720 J	1900 J	920 J	910 J	110 J	250 J	730 J	350 J
Indeno(1,2,3-cd)pyrene		--	670 J	520 J	2000 J	130 J			300 J	380 J	830 J	450 J	420 J	980 J	150 J	520 J	200 J
Dibenz(a,h)anthracene		--	320 J	240 J	1800 J				98 J	200 J	460 J	180 J	230 J	410 J	68 J	230 J	
Benzo(g,h,i)perylene		--	730 J	580 J	3660 J	140 J	89 J	48 J	330 J	390 J	330 J	410 J	430 J	120 J	210 J	600 J	220 J
Total PAHs		11000	13270 J	12785 J	47260 J	1920	1189	564	7278	8933	25992 J	17538 J	11813 J	6352	2782	7949	4671
PESTICIDES (ppb)																	
Heptachlor Epoxide			4 U					R			--	--	--		--		
Dieldrin		2	7 J		10 J			R		--	--	--	--		--	1 J	
Endrin		1	9 U					R			--	--	--		--		
4,4'-DDE		5	63 J	80 J	83 J	27 J		R		18 J	--	--	110		--	4 J	3 J
4,4'-DDD		8	100	180	130	170	45	70 J	4 J	36	4 J	4 J	--		--	8 J	14 J
Endosulfan sulfate		--	8 J		10 J			R		--	3 J	--	--		--		3 J
Methoxychor		19	44 U		36 J			R									
Endrin Ketone		--	9 U					R	2 J		4 J	5		3 J		3 J	1 J
4,4'-DDT		7	29 J	66 J		24		R		--	--	9 J	67 J		--	4 J	
Endrin aldehyde		--	9 U					R									3 J
gamma-Chlordane		--	4 J	20 J	6 J			R	7	13 J	14	12 J	--		--		
INORGANICS (ppm)																	
Arsenic		33	9.7	14.5	9.3	6.2	10.5	4.3	8.2	11.0	7.7	7.7	4.4	5.3	5.9	15.7	9.9
Barium		--	391.0	192.0	249.0			119.0	69.5	--	126.0	60.3	--	103.0	--	185.0	
Beryllium			2.1							--	--	--	--		--		
Cadmium	10		1.4 B	4.3						--	8.0	--	--		--		
Chromium			24.2	52.5	50.2	17.5	19.6	15.1	8.6	32.1	41.2	20.4	15.6	96.2	11.8	83.9	18.7
Copper	110		96.2	136.0	124.0	30.2	41.3	29.0	56.3	50.2	46.5	39.5	23.2	54.7	21.8	85.3	38.0
Iron	40000		19500.0	38800.0	35300.0		22100.0	17300.0	14900.0	24800.0	90400.0	16900.0	8600.0	26700.0	14300.0	33000.0	19000.0
Lead	250		306.0	260.0	296.0	42.1	64.3	44.7	124.0	124.0	648.0	61.3	45.3	77.4	29.3	235.0	57.9
Manganese	1100		1360.0	664.0	821.0	276.0	231.0	193.0	282.0	564.0	2420.0	580.0	431.0	3210.0	538.0	2770.0	
Nickel	75		19.5	41.3	30.7	26.0	32.6	24.7	16.9	33.2	19.5	22.9	--	16.6	19.5	18.4	29.6
Selenium			2.6	3.3						--	--	--	--		--		
Silver			0.8 U							--	--	--	--		--		
Thallium			1.2 U							--	--	--	--		--		
Vanadium	--	--	15.5 B	37.1				19.7		--	41.1	15.3		42.6	--	36.2	18.0
Zinc	820		284.0	813.0	541.0	150.0	207.0	98.3	327.0	220.0	5060.0	92.3	72.4	119.0	117.0	184.0	126.0
Cyanide			5.6	3.2	--					--	--	--	1.0		--		
PH			7.3	7.3	7.3	6.0	6.4	7.2	7.9	7.3	7.3	8.0	7.5	7.4	7.0	7.5	7.3

*(SEL) is the Severe Effect Level for benthic organisms.
-Numbers in bold reflect concentrations that exceed USEPA ECOTOX Thresholds or Ontario Sediment Guide Severe Effect Level (SEL).
-ppb (parts per billion)
-ppm (parts per million)